FOOD MANUFACTURE

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# FOOD MANUFACTURE

Vol. XXIII, No. 5 May 1, 1948

## Retrospects and Prospects

TWENTY-ONE years ago FOOD MANUFACTURE was presented to the food industry. The moment was propitious, the need existed. The British food industry was mounting the wave of progress which was to launch it on the sea of prosperity and efficiency. The manner in which FOOD MANUFACTURE proceeded *pari passu* with the industry is reviewed in the supplement to this issue, in which are included accounts, from different angles, of the course of development both of the food industry and FOOD MANUFACTURE. It is with pleasure that we publish articles by some of the authors who contributed to our first numbers. Their views have become matured with the years but their unswerving faith in the industry they serve and their recognition of our efforts are unchanged.

We offer this anniversary issue with the assurance that the endeavour of FOOD MANUFACTURE will continue to be directed towards the interests of all connected with the food industry, and by virtue of its wide circulation in the Empire and foreign countries, to demonstrate British enterprise to the world.

## Wheat Agreement

The publication of the draft Wheat Agreement comes at a time when there seems every prospect of a good harvest, and so every prospect that the parties concerned will have little to do for a year beyond setting up their machinery. That is on the assumption that a significant number of them ratify the draft proposals; and there is not much doubt that the three exporting countries and the three or four main importing countries will set their names to the agreement. Most of the smaller importing countries will presumably follow suit. They have little to gain from withdrawing and much to lose from a prolongation of the period of fantastically high prices to which they have been subjected. We ourselves, through our understanding with Canada and Australia, have escaped the worst experience of our neighbours; and it was clear during the early wheat negotiations that we were not quite as sympathetic with their point of view as we might have been. We suffered for our procrastination; for, if the agreement had been concluded six months ago, it is tolerably plain that the price levels agreed on would have been more in our favour.

The coming harvest, however, will almost certainly bring world prices below the 10s. per bushel maximum established by the agreement, though they are scarcely likely to fall below the present 7s. 6d. per bushel minimum. In that case all the exporting countries will have to do is to see that the 12 to 13 million tons of wheat reach the consumers overseas. Later in the five years covered by the agreement, the importing countries may find that they have to carry out their share of the bargain and to buy at the established minimum, even when world prices are depressed below that level.

The scheme is, in short, a device for keeping prices within safe limits and at a level that is (in the current phrase) fair both to producers and to consumers.

It has been said that there are three possible ways of establishing a certain foundation of price stability in the food markets. One would be the setting up of an international agency under FAO, supplied with considerable funds by the member countries and granted powers to acquire and dispose of surplus produce; this was the scheme advocated in the World Food Board proposals advanced by Boyd Orr and his colleagues in 1946. A second possibility would be that a single country or a small group of countries should establish a corporation with powers to purchase surplus produce on the world market when the price fell below an agreed minimum and to offer stocks for sale when prices rose above an agreed maximum. Such a device, if any country has the courage to initiate it, could certainly inject an element of stability into the markets, though it might be viewed with some suspicion by other nations. This version bears some resemblance to the plan for building up stock piles that was advanced by Lord Keynes in 1938; it has been supported by at least

one Australian economist, Colonel S. Grondona, whose arguments certainly demand attention.

That the nations would follow the third course, that of a "gentleman's agreement" for five years, was already becoming obvious when the Bruce Commission sat through the winter of 1946-1947 studying the proposals for a World Food Board. The weakness of a scheme that takes commodities one by one is manifest; but it is the most that the nations in their present mood are likely to achieve. The plan has its points; and the non-participation of Argentina and Russia is not likely to prevent it from proving its value in the five years that lie before us.

## More Pigs for Curing

The scheme for the establishment of a 500,000-acre piggery in Queensland promises to make a considerable contribution towards safeguarding the future throughput of British bacon factories. The scheme, to be financed mainly by the British Government, is estimated to produce two pigs per acre per annum for the British market, a start being made during the latter part of 1949, the ultimate output being put at 1,000,000 pigs a year.

Before the war, production of bacon and ham in Britain averaged 60,000 cwt. a week, requiring a throughput of approximately 60,000 pigs, of which 50,000 were home produced and 10,000 were imported, mainly as frozen carcasses from New Zealand. More than two-thirds of Britain's pre-war requirements of bacon and ham were imported, but British curers could have produced a much larger share of the national requirements if more pigs had been available.

The four-year food production plan aims at restoring the nation's pig population almost to the pre-war level by 1951-1952. Last year pig slaughterings averaged 15,400 a week, of which 13,600 were used for bacon and 1,800 for pork and other purposes. This compared with a pre-war average of 100,000 pigs a week, half of which were used for bacon.

Australian pigs cured in England are expected to give cheaper bacon than can be bought from Denmark, while Canadian bacon requires dollars. The scheme is also expected to reduce curing costs per pig in this country.

New Zealand is satisfied that the Queensland plan will not adversely affect the Dominion's pig industry, as the demand for pigs is too great.

Present prospects are that by 1952 British curers may have a throughput of possibly 50 per cent. more pigs than before the war if the factory capacity is available.

## Sugar and Teeth

The old question of the incidence of caries due to sugar crops up regularly, and Professor J. R. Marrack, in *Chemistry and Industry*, recently summarised the conflicting evidence on the subject. The incidence of caries fell in England during the first world war and again in the second, when the supply of sugar was restricted. It has been lower in Norway also, where the ration of sugar was 7 oz. per week. Many experiments have been made to test the effect of sugar and of sweets in particular on the development of caries, and one of these which was described by Dr. J. D. King in the *Lancet* in 1946 revealed that no increase in the incidence of caries was found when children were allowed a sweet or biscuit at bedtime. But this amount was so small in comparison with the ordinary sugar and sweet rations which the children were allowed at the same time that no conclusion could be drawn from the experiment.

In other experiments, an increase in the amount of sugar allowed has been followed by an increase in caries, but Professor Marrack points out that some factor other than sugar must be involved. In the second half of the nineteenth century, children were allowed very little sugar or sweets on the ground that, as children liked them, they must be bad for them. In the 1920's children were allowed very large quantities of sweets on the grounds that as children liked them, they must be good for them. But the children of the 1920's had much better teeth than the children of the nineteenth century.

As Professor Marrack suggests, this casts doubt on the effects of sugar on the teeth, and we wonder whether the use of the tooth brush was not better known in the 1920's than it was in the nineteenth century.

## Frozen Food Sales

Advices from Scotland indicate that, although Scottish housewives are clamouring to buy quick frozen foods, actual sales have been surprisingly disappointing, and those who have pioneered this trade confess that they are far from pleased with the situation. The explanation is that prices are far too high to permit the purchase on any scale by the mass buying market. Where stores have developed a quick frozen trade, their counters are mobbed continuously by housewives who look and listen to sales talk. Every one is a potential customer, until price comparisons are considered and the economics of the "buy" estimated by the shrewd housewife. She promptly

determines that she cannot afford the tempting food, and passes on to buy a cheaper substitute, or to do without.

The experience of one of the largest Scottish firms, pioneers of quick frozen food since the early days, who have installed an attractive section in their store, using quick freeze cabinets as counters, is that the only continuous demand has been for quick frozen peas. Again the reason is obvious—canned peas are on points (even if a little cheaper), while frozen peas are not. In the case of other vegetables, the experience is that prices do not tempt the housewife to buy, however much she longs for the food. Much the same situation has been experienced with fruit, although actually the rate of buying has been slower there than for vegetables, with the possible exception of strawberries, which sell more steadily than all other fruits. There is no demand for peaches, raspberries, plums, or cooking apples, which are in syrup, and consequently the fruit weighs less than the weight given.

A still prevailing shortage of raw material available to quick freezers is another major reason why home frozen food is scarce and imported produce too highly priced. It is felt, however, that more could be done in Britain to develop quick freezing, and that there is a large volume of business awaiting quick freeze firms if they can reduce their prices to the level demanded by present-day realities and the pressure of competitive foods.

## New Process for Peeling Fruits and Vegetables

A new process for lye peeling, the result of four years of experimentation, was described by Messrs. Hickey and Kilburn at the 1948 Annual Food Processors' Conference held at the University of California last January. The method is carried out at temperatures ranging as high as 300° F., and the resulting disintegrating action is very rapid. The time of exposure to heat is reduced to a few seconds and the penetration of heat into the product is less than that experienced in the conventional hot lye Dunkley process. This yields a firm product which can be washed and handled with less loss than normally encountered.

Previously proposed high-temperature lye peeling methods, such as the Massola process, have certain disadvantages such as irritating fumes, safety hazard of hot corrosive solutions, and the very active disintegration of the edible flesh under the skin at localised spots on the product where the skin is split by contact with the hot lye. The new method eliminates these disadvantages.

The novelty and convenience of the new method lie in the means of application. The product to be peeled is coated with a thin film of lye solution and is then passed through a continuous high-pressure steam chamber. The peel is rapidly disintegrated by the combined influence of the lye and high-pressure steam. The amount of lye in the film can be controlled by adjustment of the concentration and viscosity of the solution. Chemical action on the edible flesh under the skin is minimised because of the limited quantity of lye present. After the steaming operation the product is washed to remove disintegrated skin and residual lye.

The peeling apparatus consists of a rotary turret having nine compartments, five of which are active. Dipping and elevating equipment are synchronised to this apparatus. Pressure during exposure is quickly and easily controlled from 0 to 80 p.s.i., and time of exposure is controllable from five to thirty seconds. The method thus offers a combination of chemical and physical action of short duration which is more effective than physical or chemical action alone. Capacities will vary with the nature of the product between 10 and 15 tons per hour.

The process successfully peels Cling and Freestone peaches, apricots, prunes, plums, nectarines, and tomatoes. Root crops, such as beets and carrots, which are of extreme maturity or have been held in storage can be peeled to advantage by the new method.

## The Parasitic Animal and Food

The prevention of waste in world food supplies is being studied by experts all over the world. Serious waste is produced by living bacteria, viruses, or parasitic animals or plants which prey upon crops and domesticated animals. Dr. G. Lapage, writing in *Endeavour* (7, 25, 27), states that it is always difficult to assess this damage with accuracy and that we shall never know the precise extent of the injury done to crops by living things which either directly consume them or produce disease in them. Estimates of the damage done to domesticated animals by bacteria, viruses, and parasitic animals have, however, been made. The Second Report of the Committee on Veterinary Education in Great Britain published in 1946 states that the annual loss in England and Wales due to diseases of farm livestock alone is 10 per cent. of the output of the meat, poultry, and dairy industries, and represents a loss of nineteen million pounds a year. The National Veterinary Medical Asso-

ciation of Great Britain and Ireland later showed that this estimate was too low and added evidence that four of the major diseases of cattle alone caused an annual loss of twenty million pounds, of which twelve millions were ascribed to the loss of milk and the remainder to loss of stock.

Dr. Lapage considers that there can be no doubt that persistent unthriftiness, differentiated from actual disease or death, is one of the major causes of the serious loss of food supplies. The figures given are those of the losses inflicted on food supplies derived from domesticated animals only and if the losses inflicted upon our crops could be added to them, the total would indeed be startling.

It is difficult, if not impossible, to assess accurately the relative importance of diseases caused by bacteria and viruses on the one hand and those caused by parasitic animals on the other. One reason for this is that parasitic animals may seriously affect the health of domesticated stock without causing actual disease; the health of the stock may, however, be reduced by them to such an extent that their resistance to diseases caused by bacteria and viruses is lowered, perhaps fatally.

The kinds of parasitic animals which menace the world's food supplies belong to (1) the Protozoa; (2) the Flukes (Tremadota) and Tapeworms (Cestoda); (3) the Roundworms (Nematoda) which include (*a*) Eelworms and their relatives, which attack potato, sugar beet, wheat, oats, barley, rye, and other edible crops and (*b*) several species injurious to farm livestock; and (4) the Insects, Ticks, and Mites and some of their relatives. Dr. Lapage draws a grim picture of the damage done by each of these parasitic animals and gives a list of the diseases caused by them both in Great Britain and the U.S.A.

With regard to methods of prevention and control, Dr. Lapage states that we may take comfort from the reflexion that it is a picture of one aspect only of a many-sided complex. The study of parasitic animals and their control is still a young branch of science; the recent discoveries of powerful anti-parasitic weapons such as Gammexane, DDT, the sulphonamide drugs, phenothiazine, hexachloroethane, and other substances promise much when we have learned how best to apply them; more important still are improvements in our methods of managing farm livestock and crops, some of which have been specifically devised to combat the organisms which cause disease.

## Pig Promoted

It is no use those Americans telling us of the giant Florida turtle with a 4 foot stride as shown by tracks at Clear Water, nor of that "plankton soup" and "plankton sandwich" pronounced good by the Miami Marine Laboratory. Our gastric juice had already begun to flow quicker with the Reuter report from Paris concerning something British. At the 84th International Agricultural Show there was something more substantial in those 190 British pigs of the "large-white" breed, some scaling over 32 stone. At no time has the pig come to such high esteem as in these days of little bacon and less "roast pork with crackling." The way the pig transforms kitchen refuse and swill and sweepings into succulent pork chops is a metamorphosis explaining all this promotion of the pig from days when local by-laws banished him from any proximity to houses. Time was when "pig-headed," "pig-brained," "road hog," and "pigs in the parlour and peacocks on the promenade" were common ammunition in our vocabulary.

Now all is changed. "On, bacon, on!" we cry with Falstaff as we spur every home-fed pig to its trough. Bacon research tells of "improved Yorkshire pigs," improved in quality if not in manners. Of course, we must admit that it is to the pig's demise we are looking. There must be the right saltiness to replenish that essential NaCl required by paterfamilias when, after his vigorous weekend of golf and gardening, he faces the inevitable Monday morning. In bacon curing Nature's army of bacteria is duly enlisted to the front—or sides—of the porker's carcass. We have no time for the encyclopaedist's dismissal of the pig as "a genus of artiodactyle ungulate mammal, although the term Swine is commonly applied to the genus in Britain." We take no notice of the warning that "it wallows in the mire as do other pachydermata." Indeed, so attentive to pig welfare have we become that we applaud Walter Elliott's maxim that "the filthiness of pigsties is the fault of the owner rather than occupants." We applaud too that research committee's ruling that pigs must be in "a well-rested condition" before despatch; that fast lorries in their transport must be avoided, that the speed limit must be observed to save our bacon. The Chicago packer who canned everything except the pig's squeal is now rivalled by our Small Pig-keepers' Council's pamphlet concluding with: "Finally, to end our products, the tail can be pickled and boiled." If the British lion has had its tail twisted recently, the British pig in Paris is upholding our great tradition.

In the Yorkshire town of Beverley operates the factory of Richard Hodgson and Co., Ltd., employing upwards of 800 operatives and whose activities include the tanning of hides, the preparation of tanning extracts, and the manufacture of gelatine of all grades, and for all purposes.

**The hide trimmings are unloaded.**

# Edible Gelatine Manufacture

THE original tannery was associated with the name of Hodgson before 1815, and was developed during the second half of the nineteenth century by Colonel Hodgson. His son, Mr. Philip Hodgson, who died last year at the age of eighty-four, carried on the business and started glue manufacture about 1890.

Before the war the raw material used for edible gelatine was ossein, obtained from Belgium, which country, having large quantities of by-product hydrochloric acid available, imported dried crushed bone from India, decalcified it, and sold it for gelatine manufacture. It is a point of interest that Indian bone gives a much larger yield of gelatine than bone from other countries, the difference sometimes amounting to as much as 20 per cent.

From 1934 until 1940 a section of the Beverley gelatine factory worked exclusively with ossein, but the onset of the war cut supplies and recourse was had to trimmings from the hides used in the Beverley and other tanneries. Small supplies of ossein are beginning to come from Belgium, but most of the gelatine is still made from hide trimmings. The manufacture of gelatine from ossein follows closely the method given below for hide material.

The hide trimmings are unloaded at the side of a huge square. In this square, surrounded by factory buildings, are vats sunk into the ground with their rims a little above ground level, into which the pieces of hide are loaded and then covered with water containing a suspension of lime. At the end of from ten to fifteen weeks the material is discharged by grab and loaded into metal skips on rubber-tyred bogies or alternatively on trucks fitted with a roller blind floor which facilitates un-

**The pieces of hide in the sunken vats are covered with water containing a suspension of lime.**

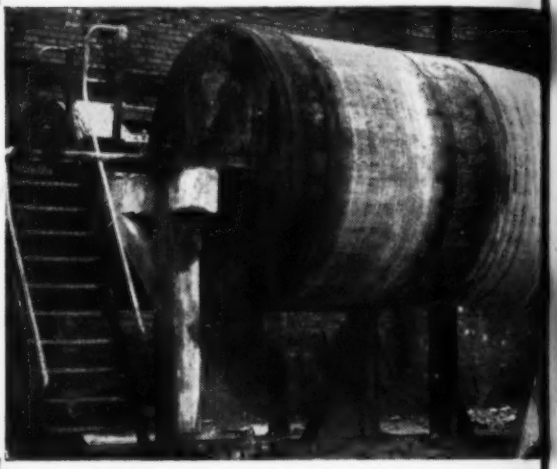
At the end of ten to fifteen weeks, the hides are discharged from the sunken vats by grab and transported to the washing vats. These are fitted with powerful revolving stirrers and the operation proceeds for twenty-four hours, after which the material is acidified with hydrochloric acid and washed again to eliminate the acid.

loading into the washing vats, in which the next operation is carried out. These vats, made of wood, are fitted with a powerful revolving stirrer. Washing proceeds for twenty-four hours, after which the material is acidified with hydrochloric acid and again washed to eliminate the acid.

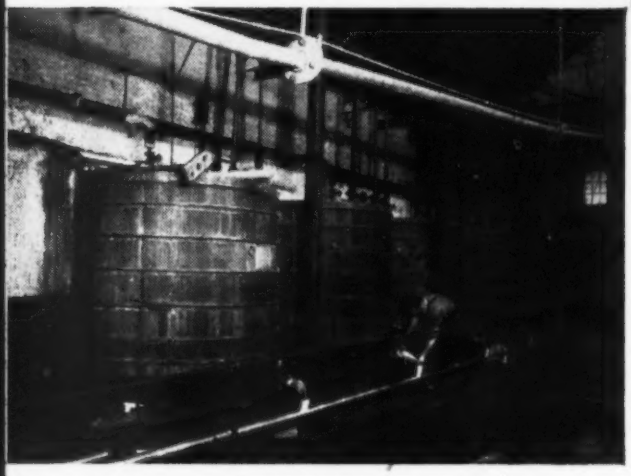
The washed, acidified, and de-acidified material is next transferred to a further set of wooden vats in which it is treated with sulphurous acid solution of such strength as to bring it to a *p*H value of approximately 5·5.

An alternative method consists of the washing, de-liming, and acidification in large revolving drum-shaped vessels, thus avoiding the handling of the material during that sequence of operations.

Next comes the so-called "melting" operation, which is the preparation of the gelatine solution.



Washing, de-liming, and acidification may alternatively be effected in huge revolving drum-shaped vessels, the use of which avoids the handling of the material during the sequence of operations.

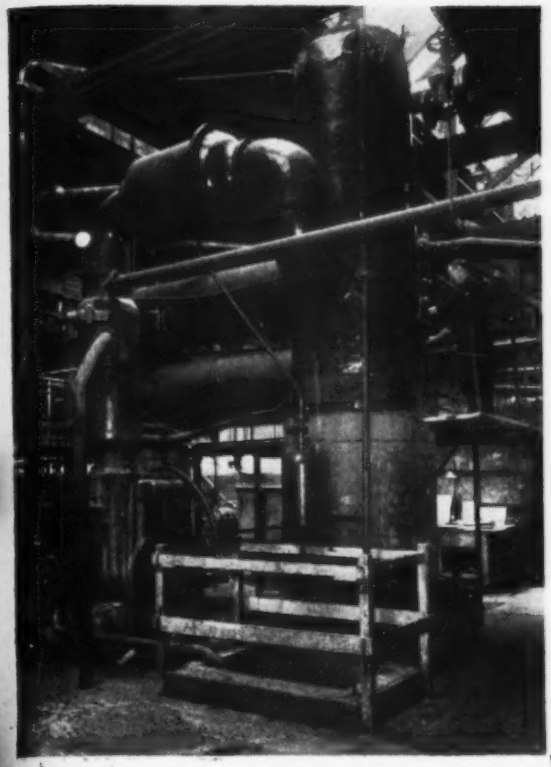


For the preparation of the gelatine solution, the treated material is loaded into large vats, leached with water maintained at 140° F. The resulting solution is drawn off and another extraction made at higher temperature and so on until the material is exhausted.

The material, prepared as described, is loaded into large vats (hitherto made of wood but gradually being replaced by aluminium) and first treated with water maintained at 140° F. The solution is drawn off, and from this is produced the finest grade of gelatine. The residue in the vats is then re-heated with water at a somewhat higher temperature and so successively until a final treatment with boiling water. Thus several grades of gelatine are prepared from each batch of raw material.

### Filtration of Liquors

The gelatine liquors are filtered in horizontal presses made of aluminium. Stress is laid upon the use of this metal and stainless steel during all subsequent operations. The filtered liquors are pumped into aluminium tanks which serve as feed tanks to the evaporators, which are of the double effect film type with side separators, the heating elements being fitted with hinge covers to give easy access for cleaning. The distribution of the heating surface is arranged to give a surplus of vapour from the first vessel which is entrained by live steam, re-



**The filtered liquors are pumped into aluminium tanks serving as feed tanks to the evaporators, one of which, by Mirrlees Watson, is shown here.**

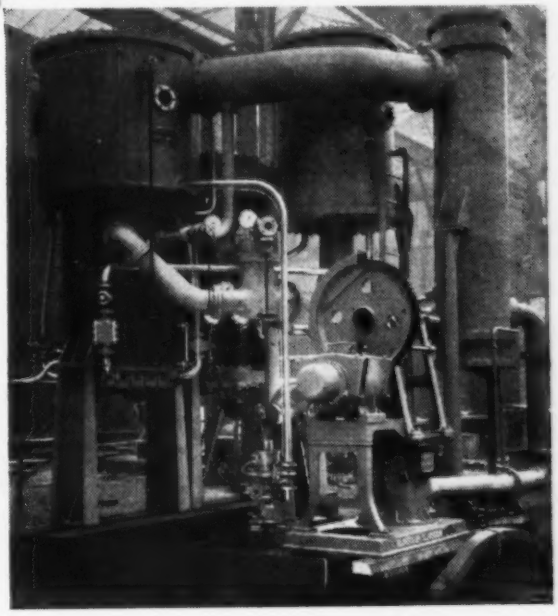
compressed in the thermo-compressor, and returned for re-use in the first calandria. The steam consumption on this type of plant is about half the normal, and the boiling temperature is regulated to suit the class of product required. Other double-effect evaporators are of the horizontal type. Evaporation is carried on until the liquors have a total solids content of from 10 per cent. to 40 per cent., when they are conveyed to tanks in the cooling and cutting room. From these tanks are drawn the concentrated liquors into vessels of convenient size to enable girls to pour them on to the cooling and cutting tables. These are about 7 feet long by 2½ feet wide, consisting of two sheets of glass between which runs cold water. The gelatine soon sets to a tough gel, which the girl operative cuts into oblong sheets about 10 in. by 4 in. The sheets are peeled off the glass tops of the cooling tables and placed on frames of stainless steel wire which are conveyed to the drying tunnel where the gelatine is subjected to a current of hot air.

From the frames the dried gelatine is bagged and stored ready to be powdered and sifted into the desired grade of fineness.

In accordance with the administration's progressive policy, the existing cooling and cutting tables will gradually be replaced by automatic machines. One of these is already in commission. It consists of a stainless steel band conveyor, 88 feet centres, which receives the hot gelatine liquor at one end, strips of jelly being automatically fed on to trays at the other end for drying.

### Steel Band Conveyor

The band is 31½ in. wide with ¼ in. deep tapered rubber strips fixed along the outer edges to form a 30 in. wide trough for gelatine. The top band passes over water tanks. When the plant is stopped the band rests on brass chevrons of "Vee" formation fitted in the tanks, and when running with the water supply on the pressure of the water is just sufficient to tend to raise the band off the chevrons, the water overflowing into a collecting tank outside. The water is fed into the tanks at the delivery end of the conveyor, the tanks being arranged in pairs; the overflow water, which has picked up a degree or two of temperature, runs to a sump and is pumped to the next pair of tanks and so on, so that the water circulates in the direction opposite to that of the material. The top of the conveyor is enclosed in resin-bonded plywood to form an air duct, this being connected to an air cooler and washer at the delivery end of the plant,



**Another evaporator used is one employing thermo-compression, by Blairs. The plant illustrated is of the type similar to the one installed in the factory.**

**Following evaporation, the liquors are conveyed to tanks, from which the concentrated liquor is drawn and poured on to the tables in the cooling and cutting room.**

and clean, cooled air is pulled through in a contrawise direction by a multivane suction fan.

The gelatine liquor is fed on to the conveyor band at a temperature of about 100° F. from a small stainless steel tank with weir. The steel band has a variable speed of from 7 f.p.m. to 35 f.p.m., giving a setting time of from two and a half minutes to twelve minutes to suit the quality and thickness of the final product.

At the delivery end the 30 in. wide stream of jelly is delivered on to a belt conveyor, where it is cut longitudinally and transversely into strips 10 in. × 6 in., which are delivered on to wire trays placed on a slat conveyor, fifteen strips being arranged on each tray, and at the end of the slat conveyor the trays are stored thirty high on a bogey for pushing into the drying chamber.

The capacity of the plant at a speed of 14 f.p.m., with a thickness of $\frac{1}{4}$ in. to $\frac{5}{16}$ in., is 300 to 350 gallons per hour.

### By-products

The residue from the hide pieces, having been exhausted, is pressed and dried for fertiliser. The pressings contain appreciable quantities of fat which is processed and purified for use as technical fat.

For a considerable time research work on photographic gelatine has been carried on in the extensive laboratories, and an important new factory is now being erected which will handle this manufacture. A very large department also deals with technical grades of gelatine.

### Laboratories

The laboratories, moved to their present site in 1934 and extended since, are well equipped for analytical and research work on photographic and technical as well as edible gelatines.

The physical properties of the gelatines sold are standardised by the use of the Bloom gelometer, the Ostwald viscometer, and the Cambon melting-point apparatus as prescribed by the British Stan-

**The gelatine soon sets and is cut into oblong sheets about 10 in. by 4 in., peeled off the cooling tables and placed on frames of stainless steel wire, each frame holding fifteen sheets of gelatine.**

**Gelatine sheets emerging from the automatic band conveyor in which the molten gelatine is cooled, solidified, and cut to the required size.**

dards Institution in B.S.S. 757, 1944. The trace metals contents are kept well within the recognised limits with the aid of up-to-date methods of analysis.

**Staff Welfare Department**

Particular attention is devoted to the Staff Welfare Department. The company maintains a canteen which provides 3,000 main meals and 17,000 beverages per week and a very large number of snacks for the employees. A three-course meal, excellently cooked and served, is provided for one shilling.

A men's club, run by the employees themselves, includes a comfortable billiards room with three full-sized tables to which the members adjourn during the lunch hour and in the evenings. In the same building there is a handsomely appointed dance hall capable of accommodating a large number of couples. The extensive playing fields are beautifully situated, and include hard tennis courts, football, and cricket grounds. An old Georgian mansion in these grounds is being converted into a pavilion and recreation centre. The sports side is conducted with great enthusiasm, and those concerned are looking forward to a cricket match this season between a Yorkshire County XI and a strong District XI in aid of that popular Yorkshire player Frank Smailes, whose benefit it is this year.

The Medical Department maintains a full-time doctor and dentist.

During a chat with Miss Taylor, the Personnel Officer, an impression of the utmost enthusiasm was gathered. Not only are the problems connected with factory work sympathetically handled, but help in domestic difficulties is also given when sought.

LIST OF SUPPLIERS OF PLANT

Timber vats, etc.: *Houlton and Grant, Ltd.*
Evaporators: *Blairs, Ltd.*, and *Mirrlees Watson Co., Ltd.*
Aluminium tanks: *London Aluminium Co., Ltd.*
Aluminium filter presses: *S. Briggs.*
Filter pumps: *British LaBour Co., Ltd.*
Filter pumps: *Rhodes, Brydon and Youatt, Ltd.*
Radiators and fans: *Keith Blackman, Ltd.*
Boilers: *Babcock and Wilcox, Ltd.*
Band cooler: *The Steel Band Conveyor and Engineering Co., Ltd.*
*Photos Leonard Hill Limited.*

**The gelatine is dried in a current of hot air in the tunnel, removed from the frames, bagged, and stored, ready for powdering, sifting, and grading.**

# Eating Out

DESPITE food shortages and difficulties in obtaining those "extras" in which chefs delight, any new book on catering should not be out of place these days. This is especially so if British catering is to be improved in the near future by precept rather than by abuse, and if the best that can be done with present supplies is demonstrated. A new work* covers a wide field; for example, it deals with commissionaires and clientele, with accommodation for customers and their cars (basic permitting!), with choice of staff and design of restaurants of various types. But it has much useful matter on menus and wines, on variety in dishes for every occasion, on serving food, and on kitchens and cooks. The author's plea is that though the past has been one of Continental cooks, the future holds high promise for British chefs once an established system of training is recognised as essential—as it was across the Channel.

This book is not out to banish the *cuisine française* which has ruled for so long. Indeed, the opposite seems to be the author's intention; for at the outset he advocates retention of "international" (why not French?) terms for most menus, and French ideas in *chefs de cuisine, sous-chefs, chefs poissonnier, entrementier, patissier, tournant,* and *gardes manger.* The trainee (assuming there are trainees) will not find a French dictionary necessary, since side by side with Continental menus are English translations. And there is a good interpolation of what Britain can offer; with beef, veal, braised lamb and carrots, and rhubarb tart all rubbing shoulders with *Hors d'oeuvres Maison, Crême de Volaille,* and *Côtelettes Reformées.* Even Scottish high teas and the kosher banquet find places in foods for every occasion. The section dealing with such customers' complaints as cold food, flat beer, tough steaks (wherever steaks are still to be found), and especially with bad service, is to be applauded. Perhaps more prominence could have been given to methods of ensuring cleanliness in food storage and to actual serving by staffs often ill-trained. In writing on catering for visitors from overseas, the author fails to stress how these visitors finding their way to provincial towns may often meet cooking of poor quality, with insipid dishes due to lack of care in preparation rather than raw material, all comparable to certain British goods of shoddy finish which have been criticised abroad. Though with a little more planning the author could improve on his first effort, for example the sections on hygiene, cleanliness, and the care of equipment could be combined, the work should serve to stimulate restaurant managers on whom the preachings of Mrs. Beeton have failed to make an impression.—M. S.

* *Restaurant Manual.* By A. W. Donnell. Pp. 128. London. Price 12s. 6d. net.

# Ministry of Food

## Latest Statutory Rules and Orders

The list given below is the continuation of the list of Orders published in *Food Manufacture*, April 1, 1948, page 175.

| *No.* | *Date.* 1948. | |
|---|---|---|
| | | PRICE FIXATION ORDERS |
| 169 | Jan. 29. | The Feeding Stuffs (Maximum Prices) Order, 1948. Revokes S.R. & O. 1946, Nos. 1261, 1730; 1947, Nos. 308, 638, 1502, 1871, 2309, 2585, 2789. |
| 183 | Feb. 4. | Order amending the Bacon (Control and Prices) Order, 1944. Revokes S.R. & O. 1947, No. 858. |
| 233 | ,, 11. | Order amending the Chocolate, Sugar Confectionery, and Cocoa Products (Control and Maximum Prices) Order, 1944. Revokes S.R. & O. 1947, No. 859. |
| 369 | ,, 24. | Order amending the Cereal Fillers (Control and Maximum Prices) Order, 1944. Revokes S.R. & O. 1944, No. 1146. |
| | | LICENSING OF ESTABLISHMENTS |
| 368 | Feb. 24. | The Food (Licensing of Establishments) Order, 1948. Revokes S.R. & O. 1943, No. 290. |
| | | MEALS |
| 482 | Mar. 11. | Order amending the Meals (Service at Social Functions) Order, 1947. |
| | | MILK |
| 483 | Mar. 11. | The Milk (Non-Priority Allowance) (No. 1) Order, 1948. Revokes S.R. & O. 1947, No. 1812. |
| | | POINTS RATIONING |
| 410 | Feb. 27. | Order amending the Food (Points Rationing) Order, 1947. |
| | | SOFT DRINKS |
| | 1947. | |
| 2756 | Dec. 22. | The Soft Drinks Order, 1947. Revokes S.R. & O. 1946, No. 945; 1947, Nos. 478, 1511, 1891. |
| | | TRANSFER OF FUNCTIONS |
| | 1948. | |
| 107 | Jan. 26. | The Transfer of Functions (Food and Drugs) Order, 1948. |
| | | VEGETABLES |
| | 1947. | |
| 2636 | Dec. 6. | Order amending the Carrots (1947 Crop) (No. 2) Order, 1947. |
| | 1948. | |
| 129 | Jan. 28. | The Root Vegetables Order, 1948. Revokes S.R. & O. 1945, No. 1135; 1946, No. 248. |
| 176 | Feb. 3. | Order amending the Carrots (1947 Crop) (No. 2) Order, 1947. |

# Acetic Acid Preserves

## Part II

## THE PICKLING PROCESS

J. R. BURRELL

THE pickling process is practically the same for all vegetables, although the fact that the fermentable carbohydrate content varies considerably between onions, cauliflower, and cucumbers, provides theoretical reasons for differing treatment, for where the sugar content is at maximum, a rapid development of lactic acid would be expected to take place.

PERCENTAGE OF SUGAR IN VARIOUS SAMPLES OF VEGETABLES.

(Average of ten samples of each type.)

| | *Per Cent.* |
|---|---|
| Onions (approx.) .. .. | 7·6 |
| Cauliflower ,, .. .. | 3·0 |
| Cucumbers ,, .. .. | 2·4 |

### Treatment of Onions

The vats (of wood, silicated concrete or slate, non-lead-glazed tiles, or glass-lined metal) are part-filled with 10 per cent. salt solution (to prevent bruising of the vegetables) and a known weight of onions put in. Sufficient salt solution is then added to ensure that the vegetables are covered after the floating head has been fixed in position.

Before this latter operation has been carried out, salt is added to the extent of 10 lb. per cwt. of onions. The vats (or casks) are then headed and the wooden cross pieces set in position. After a week, enough salt is added to bring the salt concentration up to about 11 per cent. This salt is placed on top of the wooden head, and brine withdrawn from the bottom of the raised-up vessel is used to wash it in to the rest of the contents. More salt is added every few days until at the end of four weeks the salt content of the brine is 13 per cent.

Although it might seem somewhat unscientific to keep to the use of the salinometer, which is calibrated in degrees representing percentage of saturation instead of actual salt content, it is convenient to use it as the readings are spread out along the whole salt content range, *i.e.* 0 per cent. to 26·5 per cent. (shown as zero to 100 per cent. of saturation), so that 10 per cent. of salt, for instance, becomes 40° on the salinometer.

After the fifth week more salt is added in order to bring the brine up to 14½ per cent. (55° on the salinometer), and finally the brine is further fortified to 60° salinometer (10 per cent. salt). If the material is designed to be stocked for long periods the brine is eventually brought to an even higher salt content, *i.e.* 18 per cent. to 20 per cent. (68° to 75° salinometer).

As previously stated, onions are comparatively high in sugar, so that whatever the pickler's views regarding the advisability of adding dextrose are, it certainly would seem unnecessary in this case.

Some picklers, however, give onions a preliminary water treatment prior to brining to remove some of the pungent properties and other constituents which are said to give rise to clouding and darkening at a later stage. During this pre-soaking, which operates from two to four days according to the pickler's ideas on the subject, some of the sugars are lost, and thus it would seem that it might possibly be a practical proposition to add sugar (dextrose) in this case.

### Cucumbers and Cauliflowers

Cucumbers and cauliflower are treated like onions, except that they are never given a preliminary water soaking and the fermentation is likely to take a week or two longer. Thus these vegetables are immersed in the same strength brine as are onions, but the period of bringing the strength up to 16 per cent. is lengthened by a week or so. The subsequent treatment is then the same.

In very warm weather where the fermentation proceeds rapidly it is wise to fortify the brine more quickly, *i.e.* add larger amounts of salt after ten days.

### Sauerkraut

Although not very popular in this country, sauerkraut has possibilities for the manufacture of sandwich spreads in this post-war era of shortages.

The cabbage is cleaned, shredded, and placed in large wooden, silicated, or otherwise impervious rendered concrete or other vats with 2½ per cent. by weight of salt. Shredders may be had from stock from various manufacturers in this country, and apart from this machine no other machinery is necessary except for fillers, cappers, and labellers.

The optimum temperature conditions for the Kraut process is said to be between 60° F. to 70° F. by one investigator, but 86° F. is claimed by another, so that British manufacturers may apparently take their choice.

However, although the actual lactobacilli grow most rapidly at the latter temperature (86° F.), it seems certain that if temperature conditions

are similar to this lactic acid production will be rapid, and that undesirable bacteria, yeasts, and moulds will be rapidly overgrown, against this may be set the fact that conditions are then too warm for growth of cocci, which are responsible for much of the sauerkraut bouquet.

Heating by open and closed steam pipe systems is used in cold weather, it is claimed with excellent results. It is obvious, however, that heat must be applied with care, otherwise the lactic acid producing micro-organisms normally present on the vegetable will be destroyed and the cabbage cooked. Careful treatment along these lines may produce a well-fermented sauerkraut in from seven to ten days, although the process normally requires periods ranging from five to eight weeks.

The cabbage and salt mixture should be as homogeneous as possible and, as with other pickled vegetables, a heavy board head is put on the mass to exclude air and to keep the cabbage in contact with the brine, formed of osmotically expressed cabbage juice and salt.

The board is weighted with concrete blocks or other heavy materials until the mass has sunk into place, after which the head is "keyed" down as with the other pickled vegetables.

When the acidity has reached 1·6 per cent. it is considered that the fermentation is complete. As with other pickled vegetables, air must be excluded subsequent to the fermentation, otherwise softening and darkening will occur from the activities of spoilage bacteria, yeasts, moulds, and drosophila.

### Mycoderma and Drosophila in Brine Pickles

After the vegetables have been in brine for a day or two a film of false yeast forms on the surface. As already pointed out, these micro-organisms live at the expense of the lactic and other organic acids, transforming these to carbon dioxide and water. It is therefore necessary either to skim off the film at intervals or apply some means of preventing its formation. Cloths sprinkled with volatile oil of mustard laid over the vats have a definite effect in this connexion, and this procedure also keeps off drosophila flies.

### Other Spoilage

Provided that the brine is kept fully up to strength and of acid reaction (0·5 per cent. minimum acidity as lactic acid), and the casks into which the fermented vegetables have been put are tight and filled to capacity, there should be no trouble as regards softening or darkening. A head-space in the casks would lead to loss of acidity due to growth of pseudo-yeasts (Mycoderma), and softening, darkening, or bleaching will occur. It is necessary, therefore, to inspect the filled casks at regular intervals and to replace brine lost by osmosis via the flagging material between the staves.

## POST-BRINING TREATMENT OF VEGETABLES

### Desalting the Fermented Vegetables

The casks of vegetables in brine are first drained and then the brine replaced by water. This process is repeated at the end of twelve hours, and the material is ready for use in forty-eight hours. An alternative method is to cut the brined vegetables to the size required for bottling and then to de-brine in perforated stainless or wicker vessels. These latter are filled with the cut vegetables and then suspended in vats of running water. An hour or so is usually enough to bring the salt content down to the 5 per cent. required. Another way of removing salt is to replace the brine with 6 per cent. acetic acid.

### Colouring of Cauliflower

The colouring of cauliflower is usually carried out in the actual barrels. A gallon or two of brine is drawn from the casks and about half a pound of turmeric is added to this in a stainless steel bucket. After this has been well stirred in with a large whisk the yellow suspension is returned to the barrel from which the brine was drawn. The casks are well rolled and the colour allowed a day or two to penetrate. An occasional rolling after the first day will help in the attainment of a uniform tint.

The yellow vegetable in brine may be regarded as stock and the colour will not change perceptibly for a long period and will not wash out to any extent during de-brining later on. Turmeric is not an ideal colour to use as it bleaches in sunlight, but so far there has not been found a good substitute that will not colour the whole of the pickled vegetables in the jars following bottling in vinegar.

The colouring process can be carried out after cutting the vegetable if it is convenient from the production point of view.

### Mixed Pickles

Cauliflower, onions, and cucumbers (the "flower" and cucumbers being cut, but the small onions are left whole) are the usual ingredients of mixed pickles.

The best-known firms fill out to a definite pattern in the jars, but provided that the vegetable is crisp and the cutting clean there should be no trouble in turning out a reasonably attractive article without the laborious method of filling piece by piece in its correct position in the jar, a process in which the operator uses a small stick.

If rapid filling of the non-patterned type is required, it is necessary to have the de-brined vegetable pieces cut to similar size and to have efficient mixing prior to bottling.

A chilli, a clove, a small piece of ginger, and several peppercorns, and some coriander seeds are usually added to each jar.

### Prevention of Spoilage

Spoilage is usually caused by one or more of the following factors:

(*a*) Interaction between tannins from cork stoppers and iron present in the onions or from metal caps, which leads to blueing of the onions from formation of iron tannate

(*b*) Leaky closure.

(*c*) Too large an airspace in the jar; either of these will result in softening of the vegetable and clouding of the vinegar.

(*d*) Overall acidity of less than 3·6 per cent. as acetic. This may lead to fermentation or putrefaction as a result of the growth of micro-organisms.

Thus it can be stated that a product with a tight closure, small headspace, and an overall acid content of 3·6 per cent. will keep in good condition for months.

### Achieving Correct Acid Strength

The amount of vinegar per jar is roughly equivalent in weight to that of the vegetable. Thus in order to achieve an acidity of 3·6 per cent. in the whole it is necessary either to reinforce the vinegar with acetic acid to bring this to 7·2 per cent. or to acidify the de-brined cut vegetables by immersion in an acetic solution prior to bottling with vinegar of normal strength, *i.e.* 4·5 per cent. to 5·3 per cent.

Assuming the vinegar to be 5·0 per cent., it would be necessary for the vegetables themselves to have an acid content of 2·2 per cent. so that after equilibrium has been reached (three or four days after bottling) the overall acidity would be 3·6 per cent. as acetic—assuming that there are equal quantities by weight of vegetables and vinegar.

The most convenient method is the first, and a point to be stressed is that the vegetables must be drained thoroughly before they are filled into jars.

### Pickled Onions

In all essentials the pickling of onions is similar to the procedure adopted for other pickled products. Very small onions are often put up in long cylindrical bottles as cocktail onions, and where these are closed with a cork it is necessary either to wax these thoroughly with paraffin or to insulate them from contact with the vinegar by use of a ceresin or other impervious disc in order to prevent the formation of tannates from the cork.

Cocktail onions are usually sweetened with saccharin or sugar, added to the vinegar before bottling.

### Cucumbers

Cucumbers of the large varieties are usually diced or cubed, but smaller types are bottled whole. Provided all precautions are taken as to acid strength, size of airspace, and tightness of closure, there should be no trouble as regards shelf life.

Before the war it was possible to buy just those varieties of vegetables that were considered to be the best for pickling purposes, but it would serve little purpose to concentrate on this aspect at the present time as the demand is greater than the supply of all the varieties marketed.

### Olives in Brine

The lactic fermentation of olives is not carried out in this country, and the already lye-treated and fermented fruits are received here in large puncheons or pipes.

Once these have been opened, precautions must be taken to prevent loss of lactic acid by growth of pseudo-yeasts on the surface of the brine in which the olives are received.

If the puncheon is likely to stand for long periods during the bottling-out process, it is advisable to keep a wooden head on the surface to cut down the air supply to the mycoderma, which will otherwise reduce the lactic acid content of the contents of the puncheon and so produce darkening and softening of the green brined fruits later on.

As has already been mentioned, a cloth sprayed with volatile oil of mustard will help towards prevention of this condition and will also curtail the activities of the ubiquitous drosophila flies.

If the darkening takes place notwithstanding, the original tint can be restored by the addition of lactic acid, which should be present in the bottled olives to the extent of 0·5 per cent. to 0·8 per cent.

### Filling Out

The olives are given a rapid preliminary wash in running water and bottled in 8 per cent. brine to which lactic acid has been added to the extent of 0·5 per cent.

Here, again, attention must be paid to the problem of achieving as small an airspace as possible in the jar.

(*To be continued*)

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## BOOKS RECEIVED

***Orders for any of the books listed below or reviewed in this issue may be placed with the Books Department, FOOD MANUFACTURE, 17, Stratford Place, London, W.1. It is regretted that under present conditions it is not always possible to supply books by return of post.***

*British Standards Institution Yearbook, 1947*. Pp. 324. London. Price 3s. 6d. net.

*Lubrication Vade Mecum*. By E. W. Steinitz. Pp. 40. Leonard Hill Limited. Price 2s. 6d.

*Practical Food Inspection*. By C. R. A. Martin, M.R.San.I., A.M.I.S.E. Vol. I, "Meat Inspection." Pp. 316+vii. Vol. II, "Fish, Poultry, and Other Foods." Pp. 284+vii. Illustrated. London. Price 18s. net each volume.

# The Fishery Industries of North America

## PART II.—SALT COD

DR. J. A. LOVERN
*Torry Research Station (Department of Scientific and Industrial Research)*

Salt cod is pre-eminently a product of Quebec and Nova Scotia, although there is considerable production also in New England, *e.g.* at Gloucester, Mass. In the latter case, however, much of the salt cod is imported from Canada for further processing. It is convenient to describe the various types of cure under sub-headings.

GREEN salted cod is prepared by laying the split cod with plenty of salt in concrete tanks. A saturated pickle is formed in which the fish are kept immersed by means of weights. They remain in the pickle for many weeks, and before shipment are stacked and allowed to drain. Their main outlet is in the preparation of boneless salt cod (see below). Green salting is a convenient way of disposing of excess fish at freezing plants, particularly fish too stale for the frozen fillet trade, and it is carried on at numerous plants in the Gaspé Peninsula and in Nova Scotia.

### Gaspé Cure

The Gaspé cure takes its name from the area where it originated and where it is the traditional process. The product is a lightly salted dried cod, which finds its principal outlet in countries with fairly temperate climates (*e.g.* Italy) rather than in tropical countries. It is dried either to a soft cure with about 50 per cent. moisture (for cutting to boneless fillets) or a hard cure with less than 40 per cent. moisture. In the traditional cure the drying is done in the open air by means of solar heat.

The fish are split and stacked with salt in layers until the salt has just all liquefied. This takes two or three days. Then they are subjected to alternate drying and sweating periods for about six weeks until the moisture content is below 40 per cent. For drying the fish are placed on the traditional "flakes," and are covered over if rain threatens. "Sweating," to even up the salt and moisture content throughout the fish, is achieved by stacking the fish in piles. The final product, even with less than 40 per cent. moisture, is semi-perishable and is liable to mould growth (black mould) on prolonged storage in bulk.

**A boatload of codfish being unloaded at the village of Gascon, on the Atlantic coast, Gaspé Peninsula.**

*Photos courtesy The Canadian National Film Board.*

### Hard Salted Cod

Pre-eminently produced in Nova Scotia, hard salted cod is also produced in the northerly part of Quebec. Most of it is now prepared in artificial driers. The fish are split and stacked with salt (kenched) either aboard the fishing vessels, or ashore, for three to six weeks. Kenching at sea is universal in Nova Scotia, and shore kenching is common in Quebec north of the St. Lawrence River. When brought ashore in Nova Scotia the fish are stacked in rooms maintained at 45° F. until needed. There is sometimes a gradual solution of salt on

the exposed portions of the stack (depending on the humidity of the air), and this condition is treated by throwing in handfuls of fresh salt as required. When the fish are to be dried, they are washed and scrubbed free from surface salt and slime.

The optimum drying conditions for salt fish have been worked out at the Atlantic Fisheries Experimental Station, of the Fisheries Research Board of Canada. It is the aim of the industry to operate under these conditions, although it is not always possible to achieve quite this ideal state. If automatic controls of temperature, humidity, and rate of air flow are provided on a commercial drier, the staff of the Experimental Station set the controls.

**The cod is sun-dried in long rows and cured, this method making it unnecessary to supply refrigeration for overseas shipment.**

Large fish are dried in two, or even three, operations, but small fish may be dried in one stage. The difference between the two stages is merely a matter of the most efficient rate of air flow. As placed in the driers, the fish contain about 56 per cent. to 58 per cent. water. For first-stage drying, the optimal atmospheric conditions are a temperature of 80° F., a relative humidity of 50 per cent., and a minimum air speed of 400 feet per minute. A temperature of 85° F. gives only slightly faster drying and is very near the danger point for scorching. A humidity below about 45 per cent. results in case hardening of the fish, and a humidity much above 50 per cent. results not only in a reduced rate of drying, but in the production of large salt crystals in the fish. In first-stage drying of large fish the moisture content will be reduced to about 50 per cent. In second-stage drying, a high air speed does not greatly increase the drying rate and is not economically justified. The final moisture content is reduced to 43 per cent. for the standard article, or to 38 per cent. for hard dried material for shipment to tropical areas.

### Tunnel Drier

A simple tunnel drier for salt fish, built to the design of the Experimental Station, was seen at one plant visited. Outside air can be blown by a small fan into one end of this tunnel, either directly or through a coke-fired heater, the switch over from one route to the other being controlled by a thermostat in the tunnel. The tunnel is provided with an overhead return duct. The main fan, circulating the air through the tunnel and situated at one end of it is reversible, and a two-way duct and damper allow of incoming air always reaching the suction side of this fan, so ensuring proper mixing with recirculating air. The exit for venting a certain amount of moist air from the tunnel is simply a damper at the end opposite to the fan. There is a humidity control, and if the humidity falls below 45 per cent. this control shuts off the small fan blowing in outside air until recirculation has restored the necessary humidity. The exhaust damper is set by hand. The fish, as usual in salt fish driers, are laid on metal mesh shelves, these being placed on trucks in the tunnel. There are no special arrangements, such as aerofoils, to ensure an even air flow, but the fan is reversed periodically to assist in obtaining uniform drying. A tunnel drier of this type is considered by the staff of the Experimental Station to be the most efficient salt fish drier.

In larger plants, built to the producers' own designs, a number of different items can be seen. Thus, in a typical plant, the primary drier may consist of a number of tunnels in which the fish are spread on wire mesh shelves. Outside air is taken in through a heater (steam coils) and passed over the fish at 80° F., 45 per cent. R.H., and 200 to 250 linear feet per minute. The humidity is automatically controlled by the amount of recirculation and the proportion of outside air admitted. Dehumidification may or may not be provided, *e.g.*

**A catch of 35,000,000 pounds of codfish is produced annually in the Gaspé Peninsula and cured in salt.**

by installing refrigerator coils in the recirculation duct, the cooled and dehumidified air going to the heater before return to the drying chambers. Where no dehumidification device is included, drying operations are simply suspended during unsuitable weather, as the product can easily be stored until drying can be resumed.

For second-stage drying, the fish are transferred to mesh trays in another series of chambers, supplied with air at the same temperature and humidity but at a much reduced velocity. Since large and small fish are usually placed together in the primary drier, the small fish have usually reached the desired final moisture content by the time the large ones are ready to go to the secondary drier. This time varies from twenty-four hours to thirty hours. A typical large plant can handle 400 quintals, of 112 lb. each, per week.

### The Turbo Drier

Mention must be made of a completely different type of drier, known as the "turbo" drier, and covered by a German-owned patent. This is in operation at one Nova Scotian plant. The turbo drier consists of a circular chamber, with two floors, each room taking twelve trucks of fish arranged radially about a sirocco-type fan which forms the axis of the chamber. The trucks are moved around the circumference of the chamber on rails, one truck being removed and a new one inserted each two hours, giving a drying period of twenty-four hours. The operation is thus continuous.

Air is blown outwards in all directions from the fan at a velocity of 200 to 300 feet per minute. It is essential for efficient drying that this speed should be uniform over the whole height of the chamber, since the trucks move round at one level only, and the ensuring of this even flow is not simple. The air is delivered by the fan at 75° F. to 80° F. and 50 per cent. R.H. There are additional heaters if needed in the drying chambers themselves, in the form of steam radiators around the periphery. The air leaving the drying chambers passes to a dehumidifier consisting of a spray of a strong solution of lithium chloride. This solution is in continuous circulation through a reconcentrating device in which it is first heated and then sprayed through a blast of fresh outside air. This lithium chloride dehumidifier is known as the "Kathabar," and is covered by a U.S. patent. The dehumidified air is heated and returned to the turbo drier.

The secondary drying chamber at this plant is of more conventional design, being a room heated by overhead steam coils. A turbulent air flow is maintained by means of a diffuser at one end of the room, and the temperature and humidity are again maintained at 75° F. to 80° F. and 50 per cent. R.H. respectively, the latter by "bleeding in" air from the lithium chloride dehumidifying system.

### Other Drying Methods

Hard-salted fish produced on the north shore of the St. Lawrence are partially sun-dried during the brief summer, and then shipped to Rimouski, on the south shore, where drying is completed in one stage in a drier built and operated by the Quebec Government (Dept. of Game and Fisheries). This consists of a series of wooden chambers through which air, heated by steam coils, is circulated at a speed of from 100 to 200 feet per minute, a temperature of about 75° F., and a relative humidity of 50 per cent. Up to the time of the visit, this drier had only been used during the winter, with an outside temperature below 50° F., so that no artificial dehumidifying device was necessary. If the plant should ever be operated during the summer, it is intended to instal coolers for the incoming air.

One plant in Canada still operates a drier built to the original Whitman patents, which belong to the pioneering days of the artificial drying of salt

fish. In this apparatus there are a series of drying chambers each about 30 feet long by 5 feet wide. The mesh trays of fish are placed on shelves, and between each pair of shelves is a radiator through which hot water can be circulated. Air is drawn through the tunnels by natural draught by the regulation of outside ventilators according to the direction of the wind. There is no recirculation.

### Processing of Salt Cod

Much of the salt cod intended for domestic consumption in U.S.A. and Canada is converted into boneless salt cod, *i.e.* it is carefully filleted and trimmed. Suitable trimmings are shredded and used in the manufacture of fish cakes, mainly by hotels and restaurants. There is a large production by one firm of canned "ready-to-fry" fish cakes, in which the cod is obtained from salt cod, filleted, soaked, and cooked.

It may be of interest to describe the sequence of operations at a typical plant. First the fish (which are usually of the green salted variety) are skinned and the backbones removed by one group of men, after which another group trim the fish, cutting them into two fillets, removing all rough surfaces and exposing the ends of the rib bones. The trimmed fillets then pass to girls who, with tweezers, pull out all the individual rib bones. Fillets intended for lengthy storage, or for certain areas, are sometimes dusted with preservative, to guard against "pink." This is done by a continuous process in which the fillets travel along a conveyor beneath a sprinkler. The preservatives used are boric acid and sodium benzoate. The amounts added are fixed by local State laws in the various markets, and are controlled by regulating the speed of the conveyor.

### Packaging Methods

Fillets are packed in various ways. For the highest priced markets they are packed by hand into wooden boxes or cartons, holding one pound. This packaging is done very carefully to show the best surface when the package is opened, such surface being the cut inner surface of a split thick section. Another, but less attractive, pack is prepared by compressing fillets into ½ lb. and 1 lb. cartons on an automatic filling line. The shredded product has already been mentioned. One particularly attractive material of this type made for retail sale is comminuted in four stages, and before the last one it is further dried, either in a hot air tunnel or under a battery of radiant heat lamps. Both of these processes are adapted to continuous operation. The final product is very white and fluffy and is packed in 6 oz. cartons.

*(To be continued)*

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# Food from the Colonies

A WARNING of the immense difficulties to be overcome before any great increase in colonial production of foodstuffs and raw material can be brought to fruition is contained in the interim report of the Colonial Primary Products Committee. (Colonial No. 217.)

The Committee, under the chairmanship of Mr. C. G. Eastwood, C.M.G., was appointed in May, 1947, to "review, commodity by commodity, the possibility of increasing Colonial production, having regard on the one hand to the interests of the Colonial Empire, and, on the other hand, to the present and prospective world needs and the desirability of increasing foreign exchange resources."

Little hope is entertained of expanding beef production in the African colonies within the next five years. The chief difficulty is the rinderpest disease, which is endemic in all African colonies, and which precludes the export of carcass meat, although the establishment of canneries would provide a solution to this problem, since virus diseases are not transmissible by meat in tinned form.

Existing exports of fresh and tinned butter from Kenya could, according to the report, be increased, and dairy produce could also be supplied by Jamaica and Northern Rhodesia. Nigeria's contribution might well be an export of clarified butterfat and ghee from the nomadic native herds which are distant from population centres. The prospect for a dried egg trade from the Colonies received consideration, and the Committee recommended that the attention of Colonial Governments generally, and of the East African authorities in particular, should be invited to the possibility of such an industry, and of dried, frozen, or liquid egg exports.

As to rice, the Committee concludes that the world shortage will continue well into the 1950's. The readiest area for development lies in British Guiana, and considerable expansion of present cultivation in West and East Africa is recommended.

Cocoa, tanning materials, materials for paper pulp, sugar, tea, and coffee are among other commodities awaiting the Committee's attention. The fact that capital should soon be available under the Overseas Resources Development Bill to finance large-scale Colonial development will provide further stimulus for the Committee to explore all possible ways and means of stimulating Colonial production.

**TO AUTHORS**

FOOD MANUFACTURE is prepared to consider the publication of any books on scientific and technical subjects which authors might care to submit.

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D. W. KENT-JONES, Ph.D., B.Sc., F.R.I.C. Specialist in cereals and other foods. *Early contributor.*

# Twenty-five Years of Publishing

A LITTLE over a quarter of a century ago, William Leonard Hill, trading as Leonard Hill Advertising, opened his first office in a room, let at a nominal rent by his friend, Sidney H. Roberts, at 173, Fleet Street. The other member of the firm was Miss E. M. Burgess, who coped with the copy, the blocks, and the transfer from one paper to another for the two or three clients who had trustingly committed their advertising affairs to the firm. From the first the idea was the establishment of a publishing venture, but as this needed a modicum of money and credit, which was not available at that time, it was necessary to do something to pay expenses until the first publication saw the light of day. Hence the name of the new firm and its first activities.

Struggle, self-denial, and occasional despondency were the order of those early days. Timely help and encouragement were forthcoming from the late Mr. Halls, of Speights of Fetter Lane, a firm which has since lost its identity in one of the many mergers of the inter-war period.

### Breaking Ground

Firms which collaborated by allowing the usual, or perhaps the more than usual, credit terms were the Dangerfield Printing Company and Practical Etching Services. The manager of the Bloomsbury branch of Barclays Bank was also helpful. Without such aid many a young man whose honesty and integrity are known to a branch manager and who would be, in his opinion, a good risk for a few hundred pounds, must in these days be lost to British industry through the now bureaucratic deliberations of "applications" at head office.

Among the firms with whom Leonard Hill had become friends during his experience in selling space as advertisement manager of *The Chemical Age* and who entrusted their advertising to the new firm were Price Stutfield and Co., George Scott and Son, and Kestners.

Clients who joined later were Brunner Mond (held until the formation of I.C.I.), the Rapid Magneting Machine, Wm. Gardner and Sons, of Gloucester, and J. Harrison Carter of Dunstable. With the latter two a warm friendship arose and grew, but recently broken in part by the death last year at a comparatively early age of Frank C. Gardner. After some years the advertising agency business was made into a separate company, and a few years ago Leonard Hill and Leonard Hill Limited sold for a nominal sum the goodwill and assets as a going concern to the man who had managed it in the later stage of their ownership. The business is still flourishing and serves many of the original clients.

A great deal was learned in those early days by seeing through the eyes of those who spend the money and without whose money the industrial Press as it is known today could not possibly have continued in its present form. Leonard Hill was able to see clearly many of the mistakes of the advertisers in the technical Press and also those of the proprietors of the papers and was able to correct some of those of the former, and has benefited by studying the strong points as well as the weaker points of the papers with which he placed his business. With pardonable satisfaction Leonard Hill recalls the public dinner given by Wm. Gardner and Sons, Ltd., which was attended by local Members of Parliament, the local celebrities, and, more significantly, the whole of the works staff at which he was named as having enabled the firm to come through a slump without any paying off or even reductions in wages, by means of the introduction of a new method of advertising which brought new customers from new sources.

However, triumphs did not come quickly, and many were the expedients found necessary to adopt. One was the preparation of a course in journalism written by a friend. Another venture was selling space in a quite useful *Guide to London* so successfully that the owners thought they could do it themselves the following year, while still another was connected with a *Woman's Yearbook*, with the help of a dear old soul, Mrs. Bertram, for a firm who acquired the publishing rights from a women's organisation, and later, for the same people, a little advertising in a not unmeritorious daily sheet called *Luboff's Chemical Bulletin*. Unfortunately, they were flying too high, and spent their money (and some of Leonard Hill's), on a woman's daily newspaper, which led them into Carey Street.

### Pioneering Work

All this time, while the affairs of the advertising agency were being conducted, the foundation was being laid for the first Leonard Hill publication by the compilation of names and data for the proposed compendium of the chemicial industry. In connexion with this, a somewhat amateurish circular was sent out stating what this huge volume of world chemical education would do. It closed with a phrase which ran: "As we employ no travellers or canvassers your orders should reach us through the post." Not surprisingly, no orders ever arrived.

On the adoption of the name *Chemical Engineering and Chemical Catalogue*, some personal canvassing among the most likely firms was done with satisfactory results.

George Garro-Jones (now Lord Trefgarne) was night editor of the *Manchester Daily Dispatch*, and a leader writer for the *Evening Standard*, when it published the first press notice about the work of Leonard Hill's Company, with special mention of the production of a reference book on chemical plant and processes, which is now in its 22nd edition, under the title *Chemical Industries*.

About this time Charles E. Bond, who had been a space salesman on *The Chemical Age* during Leonard Hill's days of management, joined him. The Catalogue met with sufficient success to justify proceeding immediately with its second edition and preparing plans for the launching of the first monthly paper.

### Birth of an Idea

The idea of the new paper was born during a conversation with the late J. H. Pooley, then of Scott's, when there was being considered the job of advertising some special plant of service to manufacturing confectioners and similar people. Having unsuccessfully tried advertising, Mr. Pooley was inclined to think the papers chosen were no good and did not do their job. This was not the case; they were good, but they were written for retailers. When this was pointed out to Pooley he said: "There are no papers written for food manufacturers."

At this stage an event occurred which is an important part of the history of the firm—Miss E. M. Burgess became Mrs. Leonard Hill. The first meeting of these two partners having taken place in the parish of St. Dunstan's in the West, the firm's first office also being in that parish, the wedding appropriately took place there with a small company of guests consisting of the families of the bride and bridegroom, a few personal friends, and many of the colleagues from the staffs and principals with whom Leonard Hill had worked. The two offspring of this successful and happy union were christened in the same historic church, and a significant comment on the rising fortunes of the affairs of the partners was the fact that the London newspapers were at the christening in force, and that the *Daily Express* gave a picture of the ceremony pride of place and size in the appropriate issue.

### Strenuous Preparations

Among the activities of this time were interviews up and down the country, obtaining technical copy for the Catalogue, later to be vetted and edited by Mr. (now Professor) Newitt, ferreting out potential writers for FOOD MANUFACTURE, selling subscriptions to both, and making service calls on the agency clients. There is little doubt but that the acquisition of the Brunner Mond account was an important plank in Leonard Hill's "safety" platform. Friendship with R. H. Haward, continued from the times of war, led to his recommendation to the then London manager, afterwards director, Guyton Butler. It would have been difficult to find a greater friend to a young ambitious man.

### "Food Manufacture" is Launched

It was in 1927 that a paper for a new trade was founded. The launching of FOOD MANUFACTURE was timed for January, but unexpected difficulties ensued and the first number did not appear until May. In 1937 the editorship was assumed, in succession to G. W. Lacey, by T. Crosbie-Walsh, a contributor of long standing who had had a wide experience in food manufacture in many parts of the world.

The first issue of the paper brought some appreciative comment, one reviewer especially mentioning the fact that the number carried no apology for its appearance in a crowded field, no claims either modest or grandiose, no statement of policy, of hopes and aspirations, nor, worthy of special mention, did it ask readers to offer their suggestions or criticisms. This was not accidental, because Leonard Hill believed that the readers of a journal do not know specifically what they want in their reading matter. It is for the publisher and editor to fill a gap or to create a gap based on the editor's knowledge or belief that there is a gap. No reader of the first number of FOOD MANUFACTURE could be in any doubt as to what field it was serving, and he was immediately aware that an obvious gap had been filled, for the journal was the first paper in any language to cater for the technician and the chemist engaged in the preparation of food in a factory.

### The Faithful Twelve

Advertisements in that first issue ran to thirty-two pages occupied by forty-three firms. Of those that appeared in the first issue twelve, *i.e.* W. J. Bush and Co., Ltd., Thompson and Norris, British Thomson-Houston, Thomas Broadbent, J. G. Jackson and Co. (now Jackson and Crockatt), S. H. Johnson and Co., Musgrave and Co., Premier Filterpress, George Scott and Sons, J. and E. Sturge, G. and J. Weir, and York Shipley, appeared in the index of some two hundred and fifty advertisers for 1947. Among others who became advertisers during the first year of publication and who still figure in the journal may be mentioned Alfa-Laval, Aluminium Plant and Vessel, Chambon, Ltd., Drayton Regulator and Instrument Co., Wm. Gardner and Sons (Gloucester), J. and E. Hall, Imperial Chemical Industries, Robert Kellie and Sons, and Stevenson and Howell. Mergers and amalgamations have caused the disappearance of some names, although their products are still advertised and the war and its aftermath have been responsible for the disappearance of others.

After the first year of publication a move was made to larger offices in Thanet House, 231, Strand, shortly after which Charles E. Bond became a very sick man and died a little over a year afterwards. Young man as he was, his genial and commanding presence was greatly missed in Fleet Street and in the offices of the chemical manufacturers in the country.

### Initiatives

Some time during the first and second year, Leonard Hill had the idea of starting a Society of Food Industry, but hardly had the project got under way when at a lunch with Dr. Lampitt the plans of the Society of Chemical Industry to form a Food Group were revealed, and it was agreed to discontinue separate efforts and to suggest to provisional members that they join the new Group. Another move towards the formation of a circle of a somewhat different nature arose from a wholly unpremeditated farewell party on the last day of the Canners' Convention in Bristol. The stall-holders in the canning section of the Imperial Fruit Show decided to repair to the local and take beer. As a result, the Can-Cans Club was formed, and two or three social meetings took place each year. Later, however, the light-hearted name of Can-Cans was abandoned and altered to the Canning and Food Industries Club. Enthusiasm waned, and in time the meetings ceased completely.

The last entry of Leonard Hill into this field up to the time of writing was to give a lunch at which was appointed the first committee of the Food Machinery Export Group. This functioned from 17, Stratford Place (at which address the offices had been established in 1935), for some considerable time until the whole position was clarified and several other Groups were amalgamated under the directorship of Norman Neville.

### "Food Industries Manual"

The early issues of FOOD MANUFACTURE contained the announcement of the preparation of *Food Manufacture Diary and Directory*, a publication which would include a list of manufacturers and distributors of "all edible commodities involving a process of manufacture," a buyers' guide of machinery and products, a list of trade and registered names of food products, and a diary "making it of everyday value to the recipient." For some reason this work never appeared, although it was no doubt responsible for the germ of a new idea. In 1931 *Food Industries Manual* was published, a book which, like FOOD MANUFACTURE, was presentable at birth and which has grown steadily throughout the years. Supplies of the fifteenth edition are rapidly becoming exhausted, and the sixteenth is in the course of preparation.

In January, 1934, the paper was still appearing in the red cover and in the same size and design as when it started, and by March of the same year the one and only change in design was made when the lettering and layout which the paper now displays were adopted and the size increased to 12 in. by 9 in. And so it stayed until paper rationing made it impossible for this size to be maintained. Rationing placed a clear-cut decision before publishers, to maintain their size and drastically cut the printing order (for it was impossible to avoid this by reducing the weight of the paper) or to reduce the size and maintain the print. FOOD MANUFACTURE had no option, for its sales were such that even with the lightest weight of paper the number of pages would have had to be reduced to such a small number as to be ridiculous. The position is, under the present regulations, that journals with a large pre-war circulation, if a paid circulation, have had to cut their size, whereas those not so embarrassed are able, if they wish, to retain the large size by drastically cutting their printing order. It is worthy of comment that with the position thus outlined the advertising agencies have chosen this of all times to ask for standardised sizes, with special stress on the 10 in. by 7 in. printing area. The idea, but not its timing, is approved of.

### International Contacts

The effort, time, and money spent on developing overseas circulation, firstly in the Dominions and Colonies, and secondly in foreign countries since the first issue of FOOD MANUFACTURE was published, have been well repaid in that they have placed the Leonard Hill Group in an exceptionally favourable position with regard to the paper rationing scheme by reason of the special allowances made for export journals.

The success in the building up of foreign circulation could only have been achieved by the habit of visiting lands across the seas and by the making of personal contacts with commercial and industrial leaders. Teams have already covered those parts of Europe now available, and also South Africa, America, Canada, India, and Egypt. Through the medium of the publications of the Group is disseminated the knowledge of British products, British ideas, British industrial methods, and the use of British materials and equipment among industrialists all over the world.

FOOD MANUFACTURE is still the leading periodical of the Group, pursued by the healthy rivalry of ten other associate journals, most of them catering for those industries under chemical control.

With regard to future plans, they may be epitomised by the phrase, "the cobbler sticks to his last." Fresh fields will be explored, and in this and other countries the aim of FOOD MANUFACTURE and associated journals will be to expand their service to industry, and to continue to present British industry to the world at large.

# Twenty-one Years of Collaboration

T. CROSBIE-WALSH, F.R.I.C.
*Editor*, FOOD MANUFACTURE

"THERE are no papers written for food manufacturers." As he relates, this casual remark made in 1926 to Leonard Hill, led to the birth of the idea which resulted in the inception of FOOD MANUFACTURE exactly twenty-one years ago.

At that time the dry bones of scientific methods in the food industry were beginning to stir, but apart from periodicals dealing with purely retailing aspects, it was true that there was no journal for the manufacturer.

## The First Issues

The late A. W. Knapp, Chief Chemist of Cadbury Bros., Ltd., in an article entitled "On the Paucity of Technical Periodicals dealing with Cocoa, Chocolate, and Confectionery," hailed the appearance of the first number of FOOD MANUFACTURE as "a recognition of the fact that the food industry is gradually, as production is in greater and greater units, being subjected more and more to scientific and technical control."

The same theme was touched upon by R. H. Morgan in an article on Modern Sweet Manufacture, in which he called attention to the fact that "confectionery affords a striking example of what was, up to recently, a miscellany of so-called secret recipes and practices handed down with but little change from generation to generation. Under the stimulus of modern science it has thrown off these petrifying influences and is rapidly developing into a vigorous industry of the very first rank."

R. F. Hunwicke warned the canner of the existence of bacteriological problems and H. Drake-Law discussed the sources of inaccuracy in the estimation of preservatives in food, especially in connexion with sulphur dioxide. That the industry is never free from such problems is emphasised by an article written eighteen years later (FOOD MANUFACTURE, **20**, 4, 133) on the methods for the estimation of carbon dioxide in self-raising flour.

The birth of many publications has been ushered in by dire prognostications of failure (sometimes failure has ensued without the prognostications), but from the first the founder of FOOD MANUFACTURE realised that his faith was shared by most of those who really mattered. Records of such faith and confidence are not always available, but posterity, when seeking a token of early struggles and purposeful spade work crowned with outstanding achievement, will find it recorded in the volumes of FOOD MANUFACTURE and its associated publications.

Not that there was lacking written encouragement, for in addition to Knapp's observations already quoted, most of the contributors to the early numbers of FOOD MANUFACTURE were declared apostles of food purity, scientific control in its manufacture, and maintenance of quality.

## The Canning Industry

The amazing rate of progress in the food canning industry can be realised on reading an article in the sixth number of FOOD MANUFACTURE, entitled "The New British Food Canning Industry," in which Stanley Smith quoted a remark made to him by Sir Edgar Jones: "It is painful to have to note that if an up-to-date fruit or vegetable cannery were set up in this country, then the highly specialised plant and machinery would have to be imported from America." He concluded his article by saying that the possibilities of the trade in canned goods "made in England" were vast. "It is an industry which, up to now, has lacked leadership and organisation. It deals with notoriously 'difficult' personages occupied in divers industries. But in my capacity as a humble member of the Research Committee of the National Food Canning Council, I have sat at a round table at many conferences, where farmer, fruit grower, canner, can maker, and tinplate manufacturer have discussed their problems and have actually laid the foundations of a new British industry."

Since those words were written, what a change has taken place! The canning industry, as well as other branches of the food industry, is now able to call upon British manufacturers for plant and equipment of every kind.

The average tinplate consumption for can making during the period 1934-1938 was 400,000 tons per annum, while in 1947 it was 394,800 tons, despite shortages of labour and material.

## Canning Conventions

One of the high spots of each year in the canning industry was the Annual Canning Convention, the first of which took place at Cardiff on May 20, 1927, and was presided over by Sir Edgar Jones, chairman of the National Food Canning Council, founded in 1926.

By June, 1929, the Conventions had assumed a greater importance, and as time went on conferences on the various technical aspects of canning were held. The last Convention was held in Bristol in 1938, and they have not been resumed since.

In 1937, approximately halfway through FOOD MANUFACTURE's career to date, I succeeded G. W. Lacey as editor. At the time of its debût in 1927, I had occasion to visit different parts of the world in connexion with the food industry, and except for

the U.S. the industry was in an embryonic state similar to that in the United Kingdom, and rule of thumb methods were the rule rather than the exception.

The outbreak of war in 1939 might well have brought dislocation in the production of FOOD MANUFACTURE. However, as far back as 1938 such preparations as were possible were being made, and in August, 1940, FOOD MANUFACTURE was "evacuated," and the editorial side conducted from a farmhouse in Berkshire, office equipment consisting of a typewriter and a dining-room table, which latter, however, was soon replaced by improvised office furniture.

It is a source of satisfaction in looking back to be able to say that during those war years FOOD MANUFACTURE maintained the full pre-war measure of its contents and never failed to appear at due date. Much credit for this must be given to the printers and to the contributors who, despite the rigours of war, delivered the goods.

During the war, scientific meetings and functions did not entirely cease, but after 1945 conditions, in so far as these activities were concerned, became normal. July, 1947, was a notable month when the Eleventh International Congress of Pure and Applied Chemistry was held and the centenary of the Chemical Society was celebrated. On top of this was the annual general meeting of the Society of Chemical Industry—always an interesting and popular event both academically and socially.

In 1946 the Food Group of the Society of Chemical Industry resumed its summer outings. Principally devoted to sight-seeing tours, visits to food factories, and short conferences, these outings provide a unique opportunity to those connected with all branches of the food industry to meet and talk "shop" or the other variety.

As one who was associated with the industry for many years, I feel pleasure in having the privilege of collating month by month the state of knowledge on food manufacture, and to present it as I see it, and also to be able to place before the industry the work and views of contributors, who have done much to lighten my task by their friendly and willing collaboration, and among whom I count many valued friends.

H. G. Wells, in his *New Worlds for Old*, says: "The main difference of modern scientific research from that of the Middle Ages, the secret of its immediate success, lies in its collective character in the fact that every fruitful experiment is published, every new discovery of relationships explained."

Using "scientific research" in its broadest terms (for even a new idea suggested by the humblest food factory operative may be so described), Wells's words may describe what we, who are producing FOOD MANUFACTURE, have constantly in mind.

# Modern Trends in Advertising

FREDERICK WADDINGTON

*Advertisement Manager,* FOOD MANUFACTURE

IT is only upon such a privileged occasion as a twenty-first birthday that the subject of advertisements or advertising is discussed in these editorial pages, but I submit that first of all it is worthy of record that Mr. W. Leonard Hill obtained thirty-two pages of advertisements for the first issue in May, 1927, which included the anouncements of forty-three advertisers.

The creation of FOOD MANUFACTURE involved more than the usual difficulties because of the fact that it opened up an entirely new field. For example, take the name of the journal. Most publishers in a similar position would have chosen "Food Manufacturer" as the better title, and here alone comes a subtle distinction which shows how small details make for either success or failure. FOOD MANUFACTURE describes an industry which in two words includes all its executives—production managers, works chemists, factory managers, sales directors, transport managers, maintenance engineers, boiler-house superintendents, etc. On the other hand, the food manufacturer is an individual, although in many cases in 1927 the food manufacturer himself often was "head cook and bottle washer" and the rest, including the sales manager! The success of this policy is shown by the fact that most of the original advertisers whose announcements appeared in the first issue in 1927 are still advertising regularly in FOOD MANUFACTURE.

The contrast in advertising policy between the announcements of the same advertisers in 1927 compared with the present time is most marked. A typical example is the advertisement of W. J. Bush and Co., Ltd., who announced in the May issue of FOOD MANUFACTURE in 1927 that they were "Suppliers of all leading requisites in the following trades: Manufacturing confectioners, biscuit manufacturers, brewers and distillers, custard powder and ice cream manufacturers, and other food preparations," an advertisement which was illustrated with a picture of an orchard and the phrase "Ye Oldeste Essence Distillers." W. J. Bush and Co., Ltd., realise today that all the above trades come within the food manufacturing industry, a development which has changed their advertising policy from the general to the par-

ticular, such as one of their present advertisements which is confined to one product—" Butterbelle the perfect butter flavour," with an attractive illustration in full colour of a charming dairymaid.

Another instance is the copy of the Pneumatic Scale Corporation's advertisement in 1927, which set out to convince food manufacturers that " handling means contamination and disease," as much of the packaging in those days was done by hand. This is a selling point that is taken for granted in this firm's current advertising, which now emphasises the dependability and efficiency of the machines themselves.

Thompson and Norris Manufacturing Co., Ltd., were trying to convince the food manufacturer in 1927 that a " well-designed fibre-board packing case, artistically printed in colour, attracts business . . . besides your retail customers like them because these cases eliminate the ' Returned Empties Bugbear.' " Nowadays the same company baldly state that they make " corrugated fibreboard cases, etc.," and another firm take full pages to announce that special vans call to retrieve the empties. Such is the influence of paper control on packaging today!

**Educational Advertising**

When trying to organise food manufacturers into an industry, much of the advertising in FOOD MANUFACTURE in the early years was of an educational character, and I think that this policy was a wise one at a time when few food manufacturers had an output large enough to justify expenditure on machinery and plant without the vision of national or world-wide sales for their products.

In the early years the advertising agent as we know him today, with a few exceptions, concentrated on " national " accounts, which left the purely technical and trade advertiser to prepare his own advertisements. Always, in the case of FOOD MANUFACTURE, expert assistance was to be had for the asking, but it is a well-known fact that owing to concentrated appeal purely and simply to the food manufacturer and his executives the mere announcement that " Robert Kellie and Son, Ltd., make specialised equipment and plant for jam manufacturers " would produce *some* enquiries for further details. How much more effective are the factual announcements appearing in the present issue!

**First Repercussions of the War**

When war was declared on September 3, 1939, the advertising and publishing world received a rude shock, the chief reaction of many firms being to suspend advertising immediately. As I was at that time advertisement manager of *The Newspaper World*, to my surprise I found that advertising agents and publishers reacted in a similar way. I imagined previously that publishers and agents would be the last to do so. Publishers know better today!

When I joined FOOD MANUFACTURE in the autumn of 1940 I found the food industry only just in its second wind after a few minor adjustments. Tinplate had been rationed as a material for packing foodstuffs, which gave manufacturers of cartons and packs made from other materials an excellent chance to " crash " a new market at a time when the canning and packaging of food was more important than ever.

**Substitutes and Alternatives**

The blitz caused many food manufacturers worries regarding powdered glass from windows, etc., which froze stocks until a Government inspector had called, a situation which gave another advertising opportunity to makers of board and other substitutes because replacement of windows in such circumstances was unwise and often impossible.

Export came to the fore—hence the South American issue of FOOD MANUFACTURE in 1941, which was printed in English and Spanish. One direct result from this issue was the export of the largest dehydration plant in the world to South America.

Many firms who had stopped advertising for a year or more and who wished to resume found to their dismay that Government auditors refused to admit advertising as an expense, because it had not been included in the accounts of the previous year!

As substitutes and alternatives became the order of the day, FOOD MANUFACTURE published a special War-time Expedients Number, which was well supported by manufacturers of raw materials and equipment.

**Lord Woolton and " Food Manufacture "**

In August, 1941, Lord Woolton, as Minister of Food, produced a poster giving a special message to the food workers of Great Britain, and Mr. W. Leonard Hill agreed with Lord Woolton that distribution to food factories could be done most swiftly and economically by inserting a poster in each issue of FOOD MANUFACTURE, for Lord Woolton said in this poster that " the production of food is as important as the production of munitions."

At this time began the rationing of paper to publishers. Successful journals could not cut circulation, and the only alternative was to use thinner paper and reduce the size of the page. These circumstances brought about the pocket size publication in general use by technical publishers for the first time.

FOOD MANUFACTURE was reduced in size from the March, 1942, issue because the war drew special

(*Concluded on page 224*)

# Retrospect 1927 to 1948

THOMAS H. FAIRBROTHER, M.Sc., F.R.I.C.
*Joint Managing Director, McDougalls Ltd.*

IN May, 1927, a new journal was born. It was devoted to the problems, difficulties, and successes in the manufacture of food and was christened FOOD MANUFACTURE. Its christening robe was not white but pink. At that time whiteness was the traditional emblem of purity, but during the lifetime of FOOD MANUFACTURE ideas have changed, and particularly in the case of bread the virgin whiteness has degenerated to a "greenery yallery, Grosvenor Gallery" shade, with which I, for one, have no "Patience." Thus it may be that the colour of the cover chosen for FOOD MANUFACTURE might have been prophetic in that it hinted that whiteness would not necessarily always be the emblem of purity, but suggesting that, like a lobster, it is always attractive as well as palatable. As the child has grown up the gown has been altered from time to time, and the admirers of the child have been given the opportunity of seeing the "New Look." Its length has extended and its volume expanded, and now it is presumably waiting for another alteration in fashion or compulsion for the next change. In view of its twenty-one years' experience there is no doubt that it will survive both and provide even still more "New Looks."

## The Yeomen of England

In the first issue of FOOD MANUFACTURE there appeared an article by that amazing scientific philosopher Robert Whymper. He was, in a way, a *dilettante* and a wanderer, but always an observer. The title of this article was "Food and Fortune." What a wonderful conception and how prophetic! He made some statements in it that might have figured in "Sayings of the Month" if FOOD MANUFACTURE had staged such a feature. Here is one: "The quality of our foods is of first importance." And again: "It was a simple diet of home-grown beef, home-made bread, and home-brewed beer that built the yeomen of England, for whose existence we have every reason to be profoundly thankful."

Subsequent events years after Whymper's article was written have demonstrated the fulfilment of that statement, and again we thank the yeomen of England for defending us in foreign lands and supporting us on home soils in times of duress and struggle. One wishes they could rise again and help us in the management of our country in times of so-called peace.

The title of that article, "Food and Fortune," still rings in my ears. Has food been linked with fortune or, like Hamlet, been damned by its outrageousness? How many hopes have been founded on food production and, like vaunting ambition, o'er-reached themselves? How many times could it have been said in the last twenty-one years that "eager feeding doth choke the feeder"? I am afraid there is not much chance of that happening in 1948, yet these thoughts arise from an article written in 1927.

## What is Bread?

A great deal has happened in these twenty-one years. We hoped for a lasting peace and pinned our faith on the League of Nations, only once again to find that promises were like good piecrusts, and when we asked for bread we got a stone. The food industry was finding its feet, and, in spite of the financial troubles of 1930, money was available and circulating freely at home, notwithstanding the disappearance of the gold standard. Food manufacturers were able to produce delicacies and importers still able to obtain most commodities from overseas, and although few expected a millennium no one dreamt of a *débâcle*, but in 1939 it came and with it crashed many of the hopes and expectations of food manufacturers.

The first article I wrote for FOOD MANUFACTURE appeared in March, 1928, when I discussed the factors influencing the baking properties of flour. One of my first headings was "What is bread?" Now, after twenty years, my answer to my own question is: "The Lord only knows!"

I am not proposing, in this retrospect, to talk about the progress (or what is more to the point the decadence) of flour milling. Doubtless others less nostalgic than myself will be able to talk about twenty-one years' activity in milling in spite of intense Government interference and muddle during many of these years.

## Difficulties facing the Scientist

Twenty years ago I was full of hope for the scientist who was striving to improve the baking qualities of flour and to produce a palatable and nutritious loaf. Today I am profoundly depressed by the general situation. The scientist who is trying to help the miller is thwarted on every side by Government control. He may suggest what wheats he would like in the grist and at what extraction these should be milled, but that is as far as he gets. The miller has to take the wheats the Government gives him—sometimes musty, sometimes sprouted—hard wheats when he wants soft wheats. Extractions are varied frequently, and the wheat mixtures are changed with monotonous regularity. The people of this country, who once were so fastidious about their bread, have now become like horses and

thankful for the nose-bags their masters give them. No wonder that as in the case of horses much of it falls on the wayside and the birds and rats get a turn!

This retrospect may seem pessimistic—it was meant to be in regard to the general situation of the food industries. Time, experience, understanding, the total abolition of controls, and the complete cutting of red tape may produce the optimism we all need so much today. Flour milling and production should be controlled by millers and not Civil Servants.

But as regards the journal FOOD MANUFACTURE, for which, on the occasion of its twenty-first birthday this retrospect has been written, it is very different. The journal started in a very small and unassuming way, offering, like those *recherché* restaurants we love to frequent, good food and drink without ostentation. The contributors to the editorial were (if I may be permitted to say so with due modesty) well and carefully chosen, and their efforts were adequately scrutinised before being placed on the menu.

FOOD MANUFACTURE has developed into one of the best journals devoted to food. Its make-up has always been attractive—even in the worst war periods it was always meticulously dressed—and its contents always readable as well as instructive. Thank goodness it has never been afraid to be provocative, and many of its editorial paragraphs have criticised officialdom in no uncertain terms. I have known its editors intimately and know how zealous they have been in maintaining its traditions and how jealous of its prestige. It has also had its founder, Leonard Hill, watching over its activities, development, and expansion with a paternal eye. To him and to the journal and all those who have aided and abetted I offer congratulations on attaining this successful majority, and I wish it Many Happy Returns.

# Margarine Through the Years

P. S. ARUP, Ph.D., M.Sc., F.R.I.C.

DURING the twenty-one years that have elapsed since the writer contributed the article on the manufacture of margarine to FOOD MANUFACTURE, some important developments have been observed. One well-known change in margarine manufacture is the omission of milk from the composition, the fats being emulsified with water instead. A second development is that emulsification appears to be better owing largely to the use of improved machinery for the purpose. It is quite possible nowadays to find samples of margarine in which the emulsion is not destroyed on heating above the melting point of the fat mixture, whereas formerly there was no difficulty in effecting this. Thirdly, the "vitaminisation" of margarine, although well under way twenty-one years ago, has now become more developed and universally practised.

As regards the first point, it may be noted that in the period when margarine manufacture began to make noticeable progress in England, about the beginning of the century, the object was to turn out a product as nearly resembling ripened cream butter as possible; as the ripening of cream produces a pronounced pleasant flavour in the resultant butter so it was found that some approximation to this could be achieved by the use of ripened separated milk and emulsifying it with edible fats. The fact that milk was used was undoubtedly a selling point; people were pleasantly surprised to hear of it and prejudice was dispelled.

It was, however, over twenty-one years ago that certain unsalted qualities began to appear which had been made by churning edible fats with water instead of milk, and it was found that these had very good keeping properties despite the absence of salt; on the other hand, the presence of even small quantities of milk had a harmful effect in this respect. On the basis of these and other experiences the question may be asked whether the absence of milk in margarine is greatly to be deplored. The flavour obtained by the use of ripened separated milk, it might be argued, was, everything considered, hardly adequate compensation for the loss of keeping qualities which it entailed. The proportion of protein introduced with the milk was relatively small, usually under 0·5 per cent., certainly under 1 per cent., but as the latter limit was approached the keeping powers suffered accordingly. As for any vitamins which might have been introduced with the milk, it was in any case found desirable to supplement these even when milk was used, and as we have seen the deficiency has been amply made up; indeed, it is now possible for the vitaminised margarine of commerce to be richer in vitamins than winter butter in some countries where the cows are stall fed during several months of the year.

As regards emulsification, certain valuable work was done comparatively early in this century by the Danish technician S. H. Blichfeldt, who was the pioneer of the continuous churning of margarine; being dissatisfied with the churning process in use, he investigated other industries and found machinery which could be adapted to his needs. Recent improvements may be considered as a belated continuation of his work.

These are examples of what can be effected by inter-industrial comparisons, and in such endeavours the technical press is obviously in a position to render important aid. Such a journal as FOOD MANUFACTURE may be warmly congratulated on twenty-one years of useful work.

# The Low Temperature Research Station, Cambridge

E. H. CALLOW, Ph.D., B.Sc., F.R.I.C.

Dr. Callow of the Low Temperature Research Station, Cambridge, contributed an article on the spoilage of foodstuffs to the first issue of FOOD MANUFACTURE, in which he called attention to the fact that the losses of food through spoilage were serious and advocated an extended campaign of scientific research. In his present article Dr. Callow briefly surveys what has been done at Cambridge since 1922.

DURING the war of 1914-1918 it became increasingly evident that very little was known of the scientific principles underlying the transport and storage of food. Serious losses of foodstuffs were occurring, and both the Ministry of Food and the cold storage industry asked the Department of Scientific and Industrial Research "to organise and control research into the preparation and preservation of food." Accordingly, in 1917, the Department of Scientific and Industrial Research set up an organisation for this purpose. This "Food Investigation Board" was directed by the late Sir William Hardy, F.R.S., until his death in 1934. Since then there have been three directors—first, Mr. Eric Barnard, C.B.E., D.S.O.; secondly, Dr. Charles Hanes, F.R.S.; and thirdly, the present director, Dr. Franklin Kidd, F.R.S. The present chairman of the Board is Sir Frank Engledow, C.M.G., F.R.S.,

Research work started in 1918, but for the first few years it was carried out in various University laboratories and at Smithfield and Billingsgate, the results being collected together in the annual report. It soon became clear, however, that it was desirable to focus the work into a few main channels. For this purpose the Low Temperature Station for Research in Biochemistry and Biophysics was built at Cambridge, by agreement with the University, to serve as a central laboratory. It was supervised by a Committee of Management, which represented both the University of Cambridge and the Department of Scientific and Industrial Research. Sir William Hardy was the first Superintendent, Dr. Kidd was the second, and the present Superintendent is Dr. Bate-Smith.

By April, 1922, this new Cambridge laboratory was ready for use. Dr. Kidd and Dr. West moved in from the Botany School, and continued their researches, now recognised as classical, on the respiration of apples. By the end of 1922 work had begun on the freezing of meat and fish. Dr. G. S. Adair, F.R.S., was at this time working on the osmotic pressure of proteins at 0° C., and his association with the laboratory has continued ever since. By 1928 the research staff had grown to twelve and major extensions of the building were necessary.

Hardy had a most stimulating personality, and we all felt it a privilege to work under his leadership. He considered that the way to approach food storage problems was to study the biological nature of each separate foodstuff and, in the light of this knowledge, to devise suitable methods for preservation and storage. Hardy was an intense individualist: in the first annual report (1918) he wrote, "Research by committee is suspect. In the pursuit of science the instinct of the individual counts for more than the combined intelligence of the many." However, he realised that committees might be necessary in order to bring together the practical man and the scientist.

The work of the laboratory soon began to yield results of great practical importance. Kidd and West's discovery that the respiration of the apple could be slowed down by increasing the carbon dioxide content of the surrounding atmosphere led to the use of gas-storage of fruit on a commercial scale. They further discovered that too high a concentration of carbon dioxide killed the internal tissues of the apple and gave rise to "brown heart," the cause of the hitherto unexplained spoilage of Australian apples. As a result of this work an expedition was sent to Australia to find out how the concentration of $CO_2$ in ships' holds could be kept at a level safe for apple transport.

On the meat side, it was found that carbon dioxide slowed down the growth of both moulds and bacteria. This discovery was utilised in the gas-storage of meat, and helped to solve the problem of transporting chilled beef from Australia and New Zealand. Atmospheres containing $CO_2$ were also used for egg storage. Later on, pure $CO_2$ or nitrogen was used to prevent oxidation, especially of fats in canned foodstuffs.

The theory of freezing was intensively studied, and Hardy himself showed that freezing was a much more complicated process than had hitherto been supposed. Quick freezing and its limitations were later explored, and by 1932 the picture was reasonably clear. There was, however, at that time

little scope for the application of quick freezing in this country, and it is only in recent years that these discoveries have been utilised commercially.

The work on apples was gradually extended, and other fruits and vegetables were investigated. A special research station was set up in Kent (the Ditton Laboratory, East Malling, under Dr. West) to study the storage of fruit and vegetables on a large scale. In order to keep in touch with the day-to-day problems of the fruit and vegetable industries, and to help the importer a small laboratory was opened at Covent Garden. As a further development, work on fish was transferred to the new Torry Research Station, the present head of which is Dr. Reay.

Meanwhile the parent laboratory at Cambridge was growing apace. Two new wings were built in 1928 with funds provided by the Empire Marketing Board and other additions were made during World War II. The work on meat steadily increased, and a small laboratory was started near Smithfield Market in London. Biophysics, in relation to refrigeration and dehydration, was developed, as was also micro-biology in relation to food spoilage. The work on the rancidity of fats was expanded, and the corrosion of tinplate was intensively studied. The traditional methods of curing bacon and hams were also studied and the underlying scientific principles elucidated. As an outcome of fundamental studies on cell metabolism, starch was synthesised from glucose for the first time by Dr. Charles Hanes, F.R.S., in 1940.

All through its history the Low Temperature Research Station has had a steady stream of research workers from the Commonwealth. Scientific expeditions have been frequently sent out from the L.T.R.S. to Dominions and Colonies and visits paid to countries all over the world. At the moment a team of research workers from the Department of Scientific and Industrial Research and the Ministry of Food is aboard the F.F.S. *Balaena* in the Antarctic studying whalemeat, one member of the staff is just back from Australia and two are in Jamaica.

By the time that World War II broke out, methods of food storage and transport had been improved very greatly, and, apart from enemy action, there were no large losses of the type that occurred during World War I. But there were great difficulties owing to the decrease of available refrigerated shipping space. Fortunately, for some time before the outbreak of war, attention had been given to the dehydration of foodstuffs, and the knowledge thus obtained was extended during the war and applied in many directions. Since the war, however, research at L.T.R.S. has swung back again to the investigation of the behaviour and biological nature of foods for the purpose of improving methods of preservation, storage, and transport of the nation's food.

# Advances in Food Processing

R. F. HUNWICKE, B.Sc., F.R.I.C.

MUCH water has flowed under the bridges since I wrote my first article for FOOD MANUFACTURE twenty-one years ago. At that time I had fresh in memory my work with Doctor (now Sir William) Savage for the Food Investigation Board of the D.S.I.R., which was concerned with the spoilage of canned foods of all kinds by bacterial action. But already for some years I had been engaged on work in the dried milk field for the Glaxo Department of Joseph Nathan and Co., Ltd., now Glaxo Laboratories, Ltd. Over all the intervening years my laboratory has continued its control work on dried milks made by the roller process, and what is striking in this connexion is the amazing uniformity of the results. Month after month and year after year the same low bacterial count is obtained on these powders, a result no doubt of the unobtrusive part played by laboratory control at every stage of the process.

However, this work in itself would not occupy a staff of twenty-six technicians full time; it is but a survival of the original laboratory of twenty-five and more years ago, and nowadays my staff and I are concerned much more with the production of vaccines and toxoids and the control of a great variety of pharmaceutical products, mainly parenteral preparations for injection. This results from the great development of this Company in these directions, and cannot be enlarged here.

I suppose that the two decades which have elapsed since FOOD MANUFACTURE first appeared have seen a more rapid advance in the technique of processing and handling foodstuffs of every kind than any previous period. Food canning is now an exact science, and it is possible to preserve almost every conceivable foodstuff in that way with perfect safety. Then we have the new methods of preservation by desiccation, yet to be fully developed, and various developments of freezing and spraying processes. An enormous amount of work has been done, too, on preservation of foods at low temperatures, and in the dairying industry. All this technical information must be studied in one or another of its branches by those engaged in the scientific direction of the industry, and there is no doubt that FOOD MANUFACTURE has played a notable part in making the technical advances of recent years available to those whose job it is to put them into practice.

# Twenty-one Years of Cereal Chemistry

D. W. KENT-JONES, Ph.D., B.Sc., F.R.I.C.

THIS year FOOD MANUFACTURE attains its majority—as one wit has said in this respect about human beings, has now reached the years of indiscretion. In this period we have seen FOOD MANUFACTURE go from strength to strength, and we must all recall at some time or other how we have had recourse to this journal for essential and valuable information and how that recourse has not been in vain. It is, therefore, with great pleasure and appreciation that this article for the twenty-first birthday issue is written. It scarcely seems twenty-one years ago when in the enthusiasm of youth the writer penned an article on "The Strength of Flour" for FOOD MANUFACTURE. Much change has taken place since then, but we still know insufficient about "flour strength." This does not mean that progress has not been made, but the subject is a complex one and much clarification is still wanted.

## Advances in Knowledge

FOOD MANUFACTURE first saw the light of day in 1927, the year that the writer published the second edition of *Modern Cereal Chemistry*, the first edition having been published in 1924. A comparison of the 1927 edition with the fourth edition published in 1947 reveals in a striking way the progress made in this branch of chemistry. Such comparisons are very disturbing, and it is hoped that the distinguished editor of FOOD MANUFACTURE does not feel the same concern on looking back over the same period in relation to his publication. Perhaps the most startling change in cereal chemistry is the increased knowledge about nutritional values. How little we then knew, especially about the distribution of the vitamins of the B group in the grain—a subject to which, among others, we all owe much to the Research Association of British Flour-Millers.

Since 1927, an almost new branch in the study of cereals has arisen, and it concerns the measurement of dough properties, including not only the fundamental work of such people as Schofield, Scott-Blair, and Halton, but the practical applications in this field by Chopin in France, Brabender in Germany, and Swanson in U.S. Again, although we are far from understanding all the problems involved in the strength of flour, we now have some real information on the relationship of viscosity to strength, the connexion between gluten and strength, dough qualities and strength, proteins and strength, as well as the effect of fats and lipoids on strength.

In the practical field of milling we have learnt much, especially on conditioning of wheat. Also milling technique has improved since we have had to mill to long extraction, while still maintaining a whiter colour than was ever thought possible, combined with high vitamin content. We have made great advances in understanding the mechanism of "improvers," and, although the theory is by no means universally accepted, we owe much in this respect to the views advanced by the Danish cereal chemist Hølger Jørgensen.

In the realm of enzymic chemistry, progress has been immense, and much of the credit is due to American workers in this field. The first monograph published by the American Association of Cereal Chemists deals with this subject in an exhaustive and excellent way and is entitled *Enzymes and Their Role in Wheat Technology*.

## An Era of Greater Progress

There seems little doubt that we shall soon be entering upon an era in which there will be even greater progress in cereal research, possibly especially in connexion with baking—a subject on which little systematic research work has so far been made. There is ample room for improvements and greater efficiency in fermentation and also in the actual baking process itself. The fundamental problem of staling yet remains unsolved in spite of modern knowledge of starch and of the amylose, the straight chain component, and of the amylopectin, the branch chain component. To the writer, who has spent a lifetime in the study of cereal chemistry, the future looks invitingly glorious. It seems likely that the next twenty-one years may bring even greater advances, which will doubtless be recorded in understandable language in the pages of this journal.

To what purpose is such research work undertaken? Simply to ensure that we make the best use of the raw material, the wheat grain, and the other cereals for mankind. Better, nicer eating, fresher keeping bread can be made, and such desirable eating qualities can be combined with high vitamin value, especially if the process of enrichment is practised, and generally improved nutritive value. We still mean by strength what the writer stated in FOOD MANUFACTURE in 1927, *i.e.* the ability to produce large, attractive loaves of even crumb texture, and it is desirable to be able to produce such loaves, if possible, from all sorts and types of wheat, whether these wheats be naturally "strong" or not. Also it must not be forgotten that wheaten flour is used for purposes other than the making of bread. Cakes and biscuits are important, and the correct type of flour for these must also be available. The best use of grain to produce flour satisfactory for all purposes can only be obtained if research work is actively pursued.

# Fruit and Vegetable Canning Research

F. Hirst, M.Sc., A.R.C.Sc.
*University of Bristol Research Station, Campden, Glos.*

THE year 1927, which saw the birth of FOOD MANUFACTURE, may also be taken as the date on which the British fruit and vegetable canning industry started its career on modern lines, and it is appropriate, therefore, that the industry should claim a special place in the coming-of-age celebrations.

Fruit and vegetable canning in this country dates back a long way, but there is little reliable information available regarding the number of firms engaged in the industry in its early years, or the annual output of cans. At the end of the first world war there appear to have been only four or five firms regularly engaged in canning fruit and vegetables in England, and their total annual output is not likely to have exceeded two or three million cans. These firms, although their efforts were by no means spectacular, were the pioneers of the industry, which now includes about fifty fruit canneries and sixty vegetable canneries having an annual output of about 500 to 600 million cans. They had to work against the serious disadvantage of either having to make their own cans, or having to obtain them from firms who made them with types of semi-automatic plant requiring the use of much hand labour. The industry at that time was not abreast of the technical developments which were taking place in the United States, and had no research institute which could supply the scientific and technical knowledge needed for the successful development of canning on a large scale.

## Canning Research

In 1923—twenty-five years ago—the University of Bristol appointed two research workers to investigate problems connected with the preservation of fruit and vegetables and stationed them at Chipping Campden in Gloucestershire. Studying the possible lines of development these workers soon realised that the greatest need for research lay in connexion with the canning of foods, and one of them made a tour of the United States to note the technical developments which had recently taken place in that country and to ascertain the types of scientific problems with which the industry was faced. The next stage in the establishment of a British canning industry on sound modern lines was to gather together in a single body representatives of the industry and its allied trades, which included manufacturers of tinplate, cans, lacquers, and canning machinery. This body became known as the National Food Canning Council, and took charge of questions relating to publicity until the outbreak of war in 1939.

The first great practical development, however, took place in 1927, when a fully automatic line for the making of open-top cans was installed at Messrs. G. H. Williamson's factory at Worcester. The output of this line during its first year of operation was one million cans, and with this modest beginning was laid the foundation of the modern can-making industry with its present annual output of about one thousand million cans.

The work of the Campden Research Station over those early years was primarily to conduct the necessary research and to provide technical advice to firms entering the industry, but members of the staff also helped to design lay-outs of factories and gave personal help at the canneries during the first few days they were operating. In this way the new firms were encouraged to appreciate, at an early stage, the importance of scientific methods in factory practice, and the scientific workers were able to plan their research work so as to yield the maximum benefit to all concerned.

## Chemical and other Studies

The research work undertaken at Campden can be divided roughly into problems of general chemistry, electrochemistry, biochemistry, bacteriology, mycology, physics, horticulture (field trials and tests on suitability of varieties), and various aspects of canning technique. The chief chemical studies have been connected with the corrosion of the container by its contents and, in particular, with the formation of hydrogen in the cans, the internal rusting of the containers, the discoloration of the contents, and the dissolution of tin and iron. Other subjects investigated in the chemical laboratories include determination of the losses of nutritive substances during the blanching of vegetables, the fate of organic spray residues on fruits used for canning, and the disposal of waste waters from canning factories.

Problems studied in the biochemical laboratory have been mainly concerned with changes occurring during the ripening of fruit and vegetables—particularly the starch-sugar relationships in ripening peas—the causes of toughness in seed peas, the ethylene ripening of fruits, and the identification of the enzyme system in a mould which causes disintegration of bottled fruits. This mould, *Byssochlamys fulva*, has received very thorough study in the bacteriological laboratory, where a full investigation has also been made of the conditions governing the destruction of spores of thermophilic bacteria by heat.

In the physics laboratory heat penetration tests

have been made on all types of canned fruit and vegetables. Factors affecting the pressures in cans and straining of seams have also been closely examined and special apparatus has been designed for measuring such things as the curvature of the ends of cans in relation to the internal vacuum, the depth and volume of headspace, and the relationship between internal pressure and volume of the cans.

### Horticultural Problems

Most of the horticultural problems have been studied in co-operation with horticultural research stations, and a great deal of attention has been given to testing the suitability of varieties of fruit and vegetables for canning. In the experimental rooms at Campden about 400 to 500 canning and bottling trials are carried out each season and new processes are examined. It was here that the modern methods of canning green peas and processed peas were developed—processes which contributed much towards the rapid expansion of the industry.

Although research and advice constitute the main work of the Research Station, practical help has been given to the canning industry by developing a system of inspection of canners' packs for quality. This is a voluntary scheme under which close on 10,000 cans are examined annually. The knowledge gained by the close contact of the Research Station with the canning industry enabled members of the Campden staff to help the Ministry of Food in various advisory capacities during the war, and has shown clearly how research workers have helped to establish this industry on sound scientific lines.

# Confectionery Then and Now

H. W. BYWATERS, D.Sc., F.R.I.C.

AT the time of the publication of my article in the June, 1927 issue of FOOD MANUFACTURE, the sugar confectionery industry was beginning to feel its feet after the struggles and uncertainties of the 1914-1918 war period. Competition within the industry was becoming more keen, and, with the introduction of more technical means of sweet production, 2oz. a 1d. sweets were quite common, and efforts were being made in some quarters to put 4 oz. a 1d. sweets on the market, which most people thought during the 1914-1918 period had gone for good. Wages were still double their pre-war rate, and this drive to produce cheaper sweets could only be brought to a successful climax by transferring manufacture from persons to machines. Most firms were endeavouring to cut down their staffs—"rationalisation" it was called in those days—and these rationalising schemes were to result during the next few years in the growth of the unemployment figures and the world-wide misery of the slumps of 1930 and 1931. Many of the smaller, less efficient firms were being forced out of existence, and those firms which remained sought to maintain their position by building up a better and a more loyal staff of workers to give more efficient service.

### Factory Conditions

I think the most striking advance made during the last twenty-one years is in the attention given to the factory staff. In 1927 many confectionery firms were employing labour on an hour to hour —one might almost say a minute to minute—basis. It was quite common for the girl workers in a confectionery factory to be employed for different hours each day of the week, according to the magnitude of the day's orders. Indeed, it was not uncommon for girls to be sent home at 3 o'clock in the afternoon because of shortage of work, and the following day to be requested to work overtime to get a particular order away the same day that it had been received. No such request could be refused in those days when unemployment was so widespread that no girl dare run the risk of losing her job by refusing the request of the management, however unreasonable and inconvenient it might happen to be to accede to it. With more modern methods of planning, these day-to-day methods have almost disappeared, and men and girls now expect to be able to work a full week and to take home a full week's pay every week.

### Staff Welfare

The confectionery worker has much better working conditions today in most factories than formerly. Many of the old-fashioned confectionery firms carried on their manufacturing operations in old buildings with wooden floors at different levels so that goods in process of manufacture had to be carried by hand from department to department. Any liquid spilt on the top floor would trickle through the floor boards into the rooms below, and it was often difficult to wash a floor thoroughly without spoiling goods on the floor below. Little attention had been given to factory ventilation or heating, and girls were consequently half-frozen in winter and parboiled in summer. There were no holidays-with-pay in those days, and the majority of the workers were never away from work except on a bank holiday, when there would be a trip to Southend or Blackpool which had been prepared for by careful saving for many weeks in advance.

At the time to which I refer boys were taken on from time to time and had to help as required in any part of the factory. This arrangement had its advantages in that lads with a liking for the trade learnt a little about the manufacture of all the various kinds of sweets comprised in the term "confectionery." Nowadays, the tendency is to confine a lad to one department, which gives him a very one-sided knowledge of his trade. The old "all-round confectioner," as he was called, is fast dying out, and, incidentally, the steps now being taken in certain centres to offer to entrants into the industry systematic training in all the various operations used in confectionery manufacture have come just in time and are deserving of our wholehearted support.

Another feature of confectionery manufacture twenty-one years ago was the comparative cheapness of the raw materials. Sugar was 2d. a lb. or less and flour only 1d. a lb., and with a more extended use of machinery it was just possible to show a profit on lines to sell at 4 oz. a 1d. One disadvantage of the cheapness of raw materials was the comparatively little regard paid to the saving of waste. If anything went wrong with a batch, it might be slipped away down the drain without the management knowing anything about it—unless they happened to find the drains blocked up with jelly, which might lead them to have suspicions. Many a small firm has gone into the Bankruptcy Courts because the employers did not realise that the profits were going down the drain. With more modern methods of checking products against raw materials, such practices will, doubtless, easily be detected.

### Lack of Variety

Two other changes with the passing years are worth noting. The first is that the number of different kinds of sweets turned out by a factory is very much less than it used to be. Firms which used to produce hundreds of different lines now produce tens or less. In the factory, the frequent changes in recipes, involving washing out of pans, with consequent waste of time and materials, are replaced by continual repetition work in which the same goods are turned out hour after hour, day after day, with almost monotonous regularity. Such processes, however, are just those which it pays to study in order, by mechanisation, to reduce the cost.

The second point which cannot but impress anyone who has seen the changes during the last twenty-one years is the difference in the attention paid to the packing of confectionery. In earlier years the sweets were all-important, and the public were prepared to accept the product in 4 lb., 7 lb., or even 28 lb. boxes, from which the 4 oz. bought by the customer would be weighed out into a paper bag. In the early '20s the changeover to a sealed bag or carton was just beginning to make its appeal, and if the war had not intervened, it is likely that the larger part of modern confectionery would be selling in pre-packs. The various limitations in packing materials have temporarily held up this transformation, but it is safe to say that it will continue in the future, and that far more attractive packages will be forthcoming than any we have yet seen. The chemist, to whom we owe so many of the newer plastic and metallic packing materials, is likely to become even more essential in our industry than we have realised in the past.

In conclusion, one wonders what the next twenty-one years will bring to our industry. Presumably all our present hand methods will disappear in favour of those which can be performed by machines. New and better machines for making, moulding, cutting, and packing sweets may be expected, and although some of our present types of sweets may continue to be made, probably by better and cheaper methods, we hope that new sweets will be forthcoming, of different textures, with really ravishing flavours, and with that absolutely irresistible appeal which so many have sought after in the past. New raw materials are required and men with the old-time confectionery skill blended with applied chemical and mechanical ability. Then will our industry go on shedding its cheering and comforting influence on mankind and earn the appreciation of all.

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## Modern Trends in Advertising

(*Concluded from page* 216)

attention to the food industry, and in the registration of new companies the food class was one of the highest categories. The reduced size made it possible to accept the announcements of forty-nine new advertisers during that year.

Circularising was then controlled, a situation which made the demand for advertisement space more acute than ever because many firms became conscious of a timely urge to offer substitutes in raw materials, alternatives in packaging, instruments, equipment, and service that made for economy and increased efficiency and so helped directly the National war effort.

In March, 1943, was commenced a co-operative advertising scheme to make known to all industrialists and advertising agents the advantages of using FOOD MANUFACTURE to sell their products and services. *Advertiser's Weekly*, *The Newspaper World*, *Statistical Review*, etc., were used, the copy in each case telling the reasons why a particular agent uses FOOD MANUFACTURE for one or more of his clients' advertising—a scheme that is still running to this day.

In conclusion, I am glad to say that with this war-time experience the wise business man now adapts his advertising policy to suit whatever is the current crisis, a fact proved by the great demand for advertisement space in FOOD MANUFACTURE today.

# *Quo Vadis?*

J. VALENTINE BACKES, A.R.C.Sc., A.R.I.C., D.I.C.

TWENTY-ONE years ago when I contributed the first article in the first number of FOOD MANUFACTURE, it was relatively easy to foresee the direction in which industry was heading. In those days industry, unfettered and free, looked to science for help along the road of progress. We talked about research associations, maintenance of quality and purity in foodstuffs, creation of demand by improved variety, and everything that would point to industrial development. Many of the mysteries of science were laid bare to the lay mind through the technical and trade press, an outstanding example of which is shown by the excellent service which has been rendered to industry by FOOD MANUFACTURE over the past twenty-one years.

Great as has been the development in many sections of the food industry, I do not think that comparing 1927 with 1948 we can claim twenty-one years' progressiveness in the same way as, say, plastics, the motor car industry, or air travel. This, in some cases, may be entirely due to lack of serious competition from without or to a too conservative policy from within. If, therefore, during the past twenty-one years, twelve of which were free from controls with every incentive and opportunity for development, we did not take the fullest advantage of our opportunities, what can be the omen for the future?

## Controls

Industry today is like a young lion caught in the net of bureaucratic restriction and control. Much of its initiative and energy is being wasted in trying to maintain sufficient room in which to live. Its prospects of freedom and development seem as far off today as they have ever been in the existence of the world. It must therefore fight, and fight hard, for freedom, so that when materials once again become available development of the food industries will not be retarded by the petty restrictions under which they have to work today.

At the commencement of the war the food industries placed the whole of their resources at the disposal of the Government, and its personnel, with its vast technical and industrial knowledge, formed the foundation of the Ministry of Food. The success achieved by the Ministry of Food during the six years of war was in no small measure due to the loyal support given to it by the food industries.

With the cessation of the war, the process of support should be reversed. It is the Ministry of Food's responsibility to assist industry; to remove all the unnecessary restrictions which retard progress and so allow trade to get back to its normal channels. But what is the true position? Not only is the food trade still saddled with most of the war-time restrictions, but it is constantly being saddled with more. The controllers say it is to ensure fair shares for all, but is this the real reason? Take for example the Manufactured and Pre-Packed Foods Order which, quite rightly, was introduced during the war, primarily to maintain the *status quo* of essential foodstuffs within the meagre limitations of raw materials available. To what extent is it necessary today? Raw materials that are in short supply are quite rightly allocated on a datum period basis. Raw materials that are in fairly good supply are available to those who want them, yet if many manufacturers wish to improve recipes or processes, or desire to manufacture an entirely new product, they are forbidden to do so unless they first disclose technical secrets and obtain a licence!

## Availability of Raw Materials

The variety of raw materials available to the food trade is relatively small. It is only by variable manipulation of the raw materials that the various sections of the food industry come into being. Specialities, for which this country has become noted, are in many instances due to special technique in manufacture and process of the raw materials available to everyone. Must industry continue to disclose its new recipes and technique which science and industrial research produces, and so destroy that incentive of competition which has been the backbone of our trade in the past?

It has been suggested by a prominent Minister of the Government that the whole of industry should have the advantage of all knowledge to ensure that the public get only the best. An admirable objective in theory, which has no outlet in practice. What is best to some is not so good to others. Creation of demand in the food trades depends in no small measure on variety, and who is to be the final arbiter of what is best—the Ministry official granting the licence or the general public?

The time has come when the Ministry must trust industry by recognising that the food trades of this country have a reputation for quality, and have a large capital invested in goodwill which they are not going to throw away by adopting loose methods which war-time controls set out to prevent. The first step, therefore, is for the food industries to obtain more freedom of action and so be free to give to the public the advantage of new recipes, improved technique, and greater variety without retarding initiative by having to disclose their secrets to a licensing body. The Ministry and industry did a fine job during the war—they helped

to win it. Let them now, by closer co-operation and appreciation of reciprocal problems, help to win the peace.

### Lack of Mutual Trust

The world continues to accumulate knowledge, but it still lacks wisdom. The problem of labour is a psychological one which can only be solved by men of goodwill. It is all a question of mutual trust. The recovery of the world today is being retarded through lack of mutual trust. The recovery of our country is being retarded through lack of mutual trust. Everything, therefore, must be done by labour and by industry to regain mutual trust in the realisation that divided we perish, but united there is no limit to which our prosperity can rise. A greater pride in workmanship—doing the job for the job's sake with both eyes on the work instead of one on the clock—is a moral incentive which will do more than all the posters of "Work or Want." This moral incentive can be put over only by those who are in constant and direct contact with labour. More time, therefore, must be given to the study of labour psychology if we are to return to that state of mutual trust on which our future prosperity depends.

What are the prospects of the food trades getting back to full production? They are to a degree dependent upon plant and machinery, but to a lesser extent than some of the heavier industries, and as a result their prospect of recovery is brighter. Furthermore, it is realised that the machinery in the food trades did not have such a gruelling as did other plant during the period of the war. Quite a good start, therefore, can be made as soon as essential raw materials become available.

### Buying Policy

The food industries must fight for freedom in purchasing types and varieties of the raw material they desire from their own sources, at their own price, and in their own way. Bulk buying by Government departments is financially unsound from a tax-payer's standpoint, and industrially unsound from the food industries' standpoint. The food trades of this country have been built up on specialisation, and the public taste has been satisfied by the infinite variety which the food industries have been able to place before it. Again, it must be definitely established that it is the prerogative of the food trades, with their technical knowledge and world-wide commercial contacts, to deal in commodities. They can, and will, get a better product at a more competitive price than any official bulk buyer.

So long as real shortages exist one is prepared to tolerate restriction and control, but if we take a look into the future we can at least gain some rough idea as to how long these shortages are likely to last.

### Raw Material Prospects

Most raw materials of the food industries have a direct or indirect agricultural origin, and agriculture has the first chance of recovery, more particularly in the war-devastated countries. Provided the sugar beet crop on the Continent shows average yield there should be every prospect of it augmenting the cane supply to warrant the end of sugar rationing in 1949. Agricultural advances and general recovery abroad will also brighten the prospects of the supplies of dairy products such as butter, eggs, and milk. In particular, the serious egg and egg products shortage from which we are now suffering should be alleviated in 1949, because the "machine" for producing the egg only takes six months from time of hatching to period of laying, and is available in all countries. It should be appreciated that many of the war-devastated countries must rely for their recovery on such productions, and these products will become their basis of barter.

The fat position is not so bright, and realising the groundnut scheme is not taking shape as rapidly as anticipated, it may be some time before fat supplies will improve to the extent of satisfying the demand of the food trades. To what extent the position may be altered by the Marshall plan remains to be seen.

The prospects of dried fruit should improve, because besides the Empire product Greece is still a member of the Western democracies and should not have her sources of supply restricted by the Iron Curtain.

Now all these countries that have raw materials required by the food industries will be desperately in need of those products that we have available for export, particularly coal, plant, and machinery and the like. The extent, therefore, to which we should be able to purchase plentiful supplies of raw materials for the food trades will depend upon the exportable output of our heavy industries, as all the signs show that the goods should be available if only we had the wherewithal to purchase them.

The output of hard currency countries will continue to be stepped up, and the demand for an outlet should bring down prices more within the region that we are capable of paying, and as a result there should be prospects of our obtaining those essential raw materials of which we have been deprived for so long. The food trades, therefore, are very much dependent upon the spirit of the workers in the heavy industries, as export forms the key to the solution. That depressing slogan, "Work or Want," should be replaced by one of direct incentive, "Work—your reward is more and better food."

Our ideas on research must take an entirely different turn from that which they have been

(*Concluded on page 228*)

# The Treatment of Flour

C. W. HERD, Ph.D., B.Sc., F.R.I.C.

SINCE its inception in 1927, FOOD MANUFACTURE has played a very useful part in the food industries. I know from my own experience and clientele that many executives and operational people read FOOD MANUFACTURE with very great interest and benefit—articles therein are often quoted to me. In my article on "Flour as a Raw Material," published in the July, 1927, issue, I advised the progressive miller of that day to employ scientific methods to unravel the complexities of flour and to wield scientific control over the various stages of manufacture.

Progress since then has been outstanding, and it has been most pronounced in our knowledge of wheat and wheaten flour, as used for breadmaking, etc., and in our knowledge of the malting processes of barley, as used in the brewing industry. Thus bread and beer have claimed the major attention of the cereal chemist; in this review, therefore, most attention will be given to wheat and its major product—wheaten flour. Twenty-one years ago it was the exception for the flour mill to have its own chemist, whereas today every large mill has its laboratory staff and practically every smaller mill takes the advisory service of one of the expert consultant laboratories.

## Chemical Composition

Earlier work covered the examination of the raw material and the finished products for the general chemical composition, *i.e.* moisture, protein, starch, sugars, and diastatic enzymic activity; the "strength" of a flour was defined as the ability to produce a bold, large-volumed, and well-risen loaf. Difficulty was being experienced in correlating chemical composition with the known baking behaviour of a flour and the so-called baking strength! Attempts had been made to correlate "strength" with the gliadin/glutenin ratio, or with either protein constituent alone, and later measurements had been made on the rate and extent of the swelling of gluten discs in dilute acid solution and on the hydration capacities of these proteins; the hydration capacity was frequently measured by the viscosity of the acidulated suspensions of flour in water. Attention has therefore been given to the physical side and to the physical characteristics of the protein and of the flour itself. It may be said that development in this direction has been divided into two aspects, (*a*) the physical treatment of the wheat or flour and (*b*) the physical methods of measuring the characteristics of the flour. In the former phase of the problem, heat treatment has been shown to produce a marked improvement in the baking quality of the flour; thus a heat-treated flour was "stronger" than the same flour untreated —both had the same amount of protein, and these facts led to the theory that "strength" was associated with the "colloidal" or physical character of the protein and not with the actual chemical composition.

It is now thought to be desirable for breadmaking purposes to have as high a quantity of protein as possible and to change or "improve" the quality of the protein to obtain the optimum value and the maximum baking quality. Closely associated with this question of improvement is the matter of wheat conditioning, and perhaps more work has been carried out on this problem than on any other in cereal work, although no finality has yet been reached. Many workers maintain that warm conditioning will produce the best results, others that cold conditioning over a long time give superior results, while others assert that heat treatment will give more strengthening of the proteins than any other process.

In conditioning, two achievements are desired: firstly, the optimum milling condition—that is, the easier separation of bran and endosperm—and, secondly, the improvement in the baking strength or baking quality of the milled flour. Many workers now believe that wheat conditioning should be concerned with the optimum milling condition, and that the improvement in "strength" should be obtained by subsequent treatment, either by heat treatment or by chemical treatment, *i.e.* by so-called "improvers."

## Improver Action

Twenty-one years ago chemical "improvers" were confined to ammonium persulphate and nitrogen peroxide or chlorine for bleaching, but many developments have taken place. Potassium bromate has been widely introduced, and has been responsible for a new theory of improver action and for one of the major controversies of the period under review. Nitrogen trichloride has been established on a very wide scale for the joint bleaching and treatment of flour, and is known throughout Britain and America as the Agene process. Chlorine dioxide is a more modern introduction still, and many patents have been granted in the U.S.A. for the multiple bleaching processes, that is for the use of two bleaching agents in a specific order of application. Mention must be made of the Jørgensen's "Bromate" theory of improver action. Jørgensen maintains that there are latent enzymes present in wheat and flour, and that the value of bromate is an oxidising one. He is of the opinion that the influence which minute quantities of potassium bromate exert on the baking strength of wheat flour is due to the circumstance that potassium

bromate inhibits the wheat flour proteinases activated by the presence of yeast. Substances such as glutathione, while not possessing proteolytic activity themselves, stimulate the proteinases, but can be oxidised by oxidising agents. The oxidation-reduction potential of the flour may play an important role.

**Instrumentation in the Flour Industry**

Among the physical methods of measuring flour or protein characteristics, the three main instruments which have been successful in Europe are the Brabender farinograph and extensograph and the Chopin extensograph.

The use and objects of these instruments are well known, but the great need at the present time is a standardisation of the physical properties and terms employed and the correlation of these properties with actual baking behaviour. The author believes that this can and will be done in the near future, and that flours for different purposes will be specified and manufactured in accordance with predetermined dough curve figures. Another important physical factor is the particle size of the flour itself—this is now measured by a sedimentation process and will assume much greater importance when normal conditions return.

While the protein constituent of wheat and flour has attracted most attention from the point of view of flour strength and baking quality, the starch constituent has not been neglected. Starch has been separated into a number of fractions, the chief of which are Amylose (A-fraction) and Amylopectin (B-fraction), the A-fraction referring to the linear and the B-fraction the branched molecular fractions of starch. The main instruments of attack are now known to be $\alpha$-amylase and $\beta$-amylase. Most of the work on this subject has been associated with the process of malting of barley, but starch does play an important role in bread staling. Most of the changes occurring during bread staling have been attributed at one time or another to alterations in the starch; when moisture relationships were optimum for staling, Katz found that the degree of staleness was a function of temperature, and later he reported a difference in the X-ray spectra of fresh and stale bread. Fresh crumb gave a V-pattern, while stale crumb exhibited a B-pattern superimposed on a V-pattern; on cooling and ageing, therefore, there is a tendency toward a more crystalline structure, and this worker concluded that bread staling results from the retrogradation of the starch; he considered that both starch components, amylose and amylopectin, are affected by retrogradation. Staling can be inhibited by the use of certain adjuncts, but most of these are not suitable for commercial use. The attempts to control staling are complicated by the fact that what may contribute to a good crust may be harmful to the crumb and vice versa. The factors contributing to good quality bread do help in the preservation of general bread condition, but they do not eliminate staling. The British Army used a mixture of 75 per cent. paraffin and 25 per cent. beeswax, but no information is available on this.

Much study has been given to the nutritional side of cereals, dealing with vitamin content, the amino acid content, the mineral and trace element content of wheat and flour. Prominently associated with the question of nutritive value are the questions of the degree of extraction of flour and of fortification. This complex matter cannot be discussed here, but however the result is obtained, it will be agreed by all cereal chemists that the flour and bread of the future must contain a minimum of specified nutrients with the maximum of digestibility; the importance of the phytic acid content has been debated in some detail during recent years, and, while further fundamental work is necessary, the extent of the phytate precipitation in the diet must be taken into consideration in determining the effective value of bread in the diet.

Mention must be made of the increase in knowledge in milling technology which has occurred during the last seven years. In view of the national need for greater extraction of flour from the wheat, millers and cereal chemists have studied the milling process and in particular the thiamin content of all the mill streams, and as a result of this study it has been possible to concentrate the high thiamin fractions in the better colour streams, giving an 85 per cent. extraction flour of very much better colour with a relatively high vitamin content. The richest part of the wheat grain in thiamin has been shown to be the scutellum and not the germ as was at first thought.

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**"Quo Vadis"?**

(*Concluded from page 226*)

forced to follow during the past seven years. Shortages compelled us to resort to substitutes, but substitutes must now give place to quality products. Substitutes may carry on industry for a time to bridge a gap, but they can never form the foundation on which the goodwill of an industry is to be built. The food trades are ready to recognise that substitutes were a war-time contingency and they have now fulfilled their purpose. Research, therefore, must be along the lines of discovering new products as an improvement to the old and not as an alternative. It must concentrate on discovering new methods, to give better products rather than to make "a little go a long way."

In a word, research must assist industry to create demand rather than satisfy demand so that the food trades will be equipped to face up to the strenuous competition which it will certainly meet when many of the attractions making demand on the small surplus in the wages packet of the worker return into the competitive field.

# Britain's Food Canning Pioneer

IN his Wardour Street office, in one corner of which could be seen a pile of cans and in another a refrigerated cabinet for the storage of quick frozen fruit and vegetables, and on the walls a variety of posters extolling the virtues of these products, FOOD MANUFACTURE found Mr. S. W. Smedley, one of the principal pioneers of the canning industry in Great Britain.

### First British Canning Line

It was in the years before the first world war that Mr. Smedley started canning, and early in 1918 he visited Canada and America on his first holiday for seven years. Here he toured the Annapolis Valley, the big apple-growing district, and found that not only were apples being packed, but also that they were being canned—a thing he had never imagined possible. That led Mr. Smedley furiously to think. Just as good apples were grown in this country and much of the crop was wasted. Urged forward by the brightness of the possibilities, he went the whole hog and his holiday eventually resolved itself into a grand tour of every canning factory he could find between Canada and Chicago, finishing up in New York. It was during a luncheon there with the chairman of the American Canning Company that Mr. Smedley found himself to be the possessor of his first line of machinery for canning and, he believes, the first line of automatic machinery to be brought into this country. This plant was installed at Wisbech.

Some twenty-eight years after this American visit, Mr. Smedley took another "holiday" in the Channel Isles, which resulted in the controlling interest of a Jersey canning factory, now packing goods mainly under the "Smedley" brand and controlled by the National Canning Co., Ltd.

At the time of our interview he was on the eve of a visit to Egypt, and we are wondering what sort of a "holiday" this will turn out to be. Mr. Smedley did not tell us much about this, but according to the *Evening Standard* he went to teach a cousin of King Farouk of Egypt how to run a fruit canning business.

### British v. American Packs

On the subject of the British *v.* the American canned product, Mr. Smedley is strong in his assertions that the British product is superior, although he admits, rather wistfully, that there is more scope for the American canner, conjuring up visions of canned apricots, peaches, pineapples, and Bartlett pears. Of the latter fruit, however, he spoke hopefully of the prospect of large-scale canning in this country during the present year.

Quick frozen strawberries from the Continent provided Mr. Smedley with food for further thought.

He first saw this product ten years ago, and was so struck with it that he determined to produce a similar pack. Machinery troubles faced him again, and eventually, following a further visit to America culminating in the purchase of a pilot plant capable of putting down 100 tons, Mr. Smedley today has quick freezing plants in operation at Wisbech, Faversham, Evesham, and Dundee. Although the processing of fruit and vegetables by this method was discontinued during the war, it is hoped to increase production this year, aided by the Government's sanction to go right ahead.

Foreseeing a great future for the quick freezing industry, which at the moment is still hampered by teething troubles, Mr. Smedley does not consider it will become a serious competitor to the canning industry. For one thing the storage life is a limited one, and in this country at any rate the question of competition could never arise until every home has its own refrigerator, which at the moment seems to be a pipe dream.

### Government Controls

Government controls are a sore point with Mr. Smedley. The big snag so far as he is concerned is the shortage of cartons, and he bemoans the lack of co-operation between the Ministries, citing as his own particular cross the Ministry of Food who tell him to go ahead and pack as much fruit and vegetables as he likes, and Paper Control who says: "Sorry, we haven't any paper for cartons."

One thing Mr. Smedley is quite certain about—dehydration is "dead and damned," and the subject is dismissed with an airy wave of the hand accompanied by utterances of the cost and wastefulness of the process.

Congratulations on reaching its majority and wishes for continued success in the future were offered by Mr. Smedley, who spoke of his interest in FOOD MANUFACTURE during the last twenty-one years. He spoke, too, of its readers who look to its publication each month to keep them up to date with developments in the food industry.

# Greetings

**A selection of letters received from some of the early advertisers in FOOD MANUFACTURE on the occasion of its twenty-first birthday.**

As one of the earliest advertisers in FOOD MANUFACTURE we send our congratulations and best wishes on your twenty-first birthday.—*Dawson Bros., Ltd.*

■

May we offer our heartiest congratulations to your journal on reaching its twenty-first birthday.—*Kestner Evaporator and Engineering Co., Ltd.*

■

After twenty-one years' association, we send congratulations to FOOD MANUFACTURE for valuable service not only to the food and allied industries, but also to the engineering firms serving these industries.—*Alfa-Laval Co., Ltd.*

■

Please accept our congratulations on the twenty-first birthday of FOOD MANUFACTURE; may you have a long life of useful service to the food industry.

We have found FOOD MANUFACTURE a useful journal and its publishers extremely friendly and easy to work with.—*The Pulsometer Engineering Co., Ltd.*

■

Our sincere congratulations on the occasion of your twenty-first anniversary.

We circulate your journal among our senior executives each month, owing to its value in keeping us in touch with the latest developments and news of the food industry. May we wish you continued success? —*Reads, Ltd.*

■

Hearty congratulations to FOOD MANUFACTURE on its coming of age. Since its early days, when the Q.P. emulsifier first appeared in its pages, both have gone from strength to strength. We hope the past standards of journalism will be continued into the future, and that success will continue to support and reward these standards. Good luck.—*Ormerod Engineers, Ltd.*

■

We would like to offer heartiest congratulations on your coming of age, and hope that future editions of FOOD MANUFACTURE will attain the fine standard of your past efforts. We have been advertising in your journal now for some years, and look forward to a continuance of our happy association for many more years to come.—*Hunt Partners, Ltd.*

■

Congratulations on reaching the twenty-first milestone of a notable career. May every success attend the future continuance of FOOD MANUFACTURE.

We like to think that having appeared in the journal since its formation, we, too, in a very small measure, have contributed to the attainment of a high standard of excellence in trade journalism.—*Stevenson and Howell, Ltd.*

Perusal of FOOD MANUFACTURE's pages, both advertising and technical, shows in many ways just how the development of our machines has followed the trade requirements set forth by the publishers and the journal's technical experts. Thus, working hand-in-hand, you have guided and assisted us and the industry to a remarkable degree.—*Wm. Gardner and Sons (Gloucester), Ltd.*

■

The food industry today and during recent years has been very much in the limelight, due to shortage of good foodstuffs and feedingstuffs in all industrial countries, by reason of the war.

We should like to pay tribute to FOOD MANUFACTURE, which has served and continues to serve the foodstuffs industry and plant manufacturers so well.—*L. A. Mitchell, Ltd.*

■

May we take this opportunity of congratulating you on attaining your majority.

It is particularly interesting to the writer as he still remembers the first copies being brought to the Grocers' Exhibition by Mr. Leonard Hill in what was probably the first year of issue. Your progress is an outstanding success and a result of hard work and enterprise.—*A. R. Smith, Automatic Weighing and Packing Machine Company.*

■

It hardly seems twenty-one years since we first started advertising in your journal—then a mere babe in arms, but since grown to man's estate. During this time we have most of us changed, not only in our size and shape, but also in the very nature of our business too.

We hope that your journal will move forward from its coming of age to an even more successful "prime of life."—*Fredk. Boehm, Ltd.*

■

We feel that the twenty-first anniversary of FOOD MANUFACTURE calls for recognition of the services rendered to the trade by this excellent publication. Being among the earliest contributors, we have reviewed each edition with interest, and the progress of this journal commands our admiration and sincere congratulations.

The first issue of FOOD MANUFACTURE closely followed the establishment of our own company, and we have on more than one occasion been indebted to this journal for a service which has assisted in our own advancement.

The interesting articles appearing from month to month contain a wealth of knowledge to all persons connected with the food industry, and, as a medium for advertising, FOOD MANUFACTURE is too well known to require comment.—*Polak and Schwarz (England), Ltd.*

Please accept our congratulations on the attainment of your twenty-first birthday. The high standard set by your journal and its comprehensive character fully merit the success it has achieved.

We, like you, are the servants of all engaged in food manufacture, and trust that we may continue to co-operate in serving the industry to the best of our ability.

With our best wishes for your ever-increasing success.—*National Adhesives, Ltd.*

*

We commenced advertising in FOOD MANUFACTURE in 1927. Since its inception we have found FOOD MANUFACTURE to be the "key of the door" to big business from food manufacturers in all parts of the world.

We would like to take this opportunity of saying "Many happy returns" on your twenty-first birthday, and hope that our mutually pleasant and cordial association continues for many, many years to come.—*Robert Kellie and Son, Ltd.*

*

It is deplorably hard nowadays for Britons to know on which side their bread is buttered. More information on the subject, and more butter on the bread, are the two means by which their difficulty can be eased, and FOOD MANUFACTURE, we are sure, will always strive both to give them the one, and to advocate measures that may procure them the other.

Publicity serves the food industries both as a spur to efficiency and as an important safeguard of the interests of consumers.

We congratulate FOOD MANUFACTURE on twenty-one years' service of this sort, and hope that they may long continue.—*Henry Simon, Ltd.*

*

It seems hardly possible to appreciate that FOOD MANUFACTURE is now celebrating its twenty-first anniversary. We in the engineering trade have come to look upon this journal as one which is permanently with us.

Looking back over the years we note with considerable pleasure the constant advances that have been made in the production of the journal itself, and firmly believe that were it not for the present-day restrictions even greater advances would have been made. The editorial staff are to be complimented on the continued inclusion of a large number of attractice articles and advertisements.—*George Scott and Son (London), Ltd.*

*

The advent of a journal catering for a specific industry is an event that gives quite a reliable indication of the state of development of that industry. Enterprising publishers lose no time in producing a journal when an industry has reached a stage that justifies it.

The production of food is the oldest industry in the world, and yet the first journal to cater for the food manufacturer only now comes of age. It is a reminder of how recent a development is the scientific processing of food. Once an industry has reached this state of development the technical and trade journal fulfils an indispensable function in disseminating ideas and information.

We congratulate the food manufacturer's first journal on its coming of age.—*The A.P.V. Co., Ltd.*

Good wishes and congratulations on the twenty-first anniversary of your very fine trade journal FOOD MANUFACTURE.

Our association with your journal goes back to the first publication, and has always been an excellent medium in getting our packaging and bottling equipment to so many users.

We have many good reasons to wish FOOD MANUFACTURE a continuation of merited success.—*The Pneumatic Scale Corporation.*

*

Congratulations! Is it really twenty-one years? When we think back over that period, including the second world war, when food was a "first munition," and when we review the continuing world food problems since, we realise more than ever the importance of your work, and the size of the scene you cover.

We remember the pioneering efforts of Mr. Leonard Hill and his colleagues. Their enthusiasm and undaunted perseverance have been rewarded by the important position FOOD MANUFACTURE now holds in the industry.—*William Brierley, Collier and Hartley, Ltd.*

*

We are indeed glad to tender our congratulations on the twenty-first birthday of FOOD MANUFACTURE.

The existence of a strong trade press has undoubtedly been a factor in the rapidity with which the production of processed food has developed during the past generation.

As producers of high standard flavouring materials for over a century, we are keenly interested in such modern developments of the food industry, at home and abroad, as are reported from month to month in the pages of FOOD MANUFACTURE. Please accept our cordial good wishes and congratulations on the high level in technical journalism and display you have set and on the status you have already achieved throughout the industry.—*Stafford Allen and Sons, Ltd.*

*

Opening the first number of FOOD MANUFACTURE in the early summer of 1927, the reader with foodstuffs to sell or distribute looked with interest at the headline, "Packing that Pays," inside the journal's front cover. In September of that year the same reader found himself encouraged to "Look Through Your Customer's Glasses" at the way goods were packed, and in December came the warning notice, "There's a Limit to Every Customer's Patience." This was the beginning of our twenty-one years of advertising in FOOD MANUFACTURE.

Your periodical was a happy choice as an advertising medium for a firm whose products play a vital part in the clean and careful distribution of the country's food supplies. From its earliest issue FOOD MANUFACTURE has always taken a specific interest in improved methods of packing food hygienically, economically, and attractively. In its first editorial comment FOOD MANUFACTURE pointed out that paper containers for foodstuffs were a form of packaging with such obvious advantages as "the safeguarding of purity and quality." We take this opportunity of congratulating FOOD MANUFACTURE on its coming of age and wish it every success in the future.—*The Thompson and Norris Manufacturing Co., Ltd.*

## TWENTY-FIRST BIRTHDAY SUPPLEMENT

As advertisers in the first issue of FOOD MANUFACTURE, we should like to offer you our very sincere congratulations upon attaining your twenty-first birthday and wish you every success in the future.—*The Beth Label and Wrapper Machines, Ltd.*

■

Our congratulations upon completion of twenty-one years, and our best wishes for future years. Food processing has in the last two decades made vast strides, and it would seem that even greater fields are ahead. No doubt FOOD MANUFACTURE will still continue to play a great part in this respect.—*Premier Colloid Mills, Ltd.*

■

May we offer our heartiest congratulations on reaching your twenty-first birthday. To have survived the last twenty-one years is indeed a notable achievement in itself. It bespeaks a service that filled the need in our rapidly expanding technological world. We confidently look forward to increasing helpfulness from FOOD MANUFACTURE as an enlightening clearing-house for facts and data for the mutual help and benefit of all concerned in the food industry.—*Dewey and Almy Limited.*

■

We offer our very sincere congratulations to FOOD MANUFACTURE on its twenty-first birthday and our best wishes for its success in the future.

As refrigerating engineers the food manufacturing industry is naturally of particular interest to us, since it is one of the largest users of our products. To keep these products constantly before potential purchasers, advertising in a trade periodical is essential, but it is vitally important that the periodical employed for the purpose should have a wide and influential circulation in the industry for which it caters.

Our confidence in FOOD MANUFACTURE is shown by the fact that it has carried our advertisements regularly for so many years that, in the absence of any actual record, we are not quite sure when the first one appeared. We feel certain, however, that at that time FOOD MANUFACTURE was so young that there could not have been more than a very few candles on its birthday cake; possibly it had not even had a birthday then.—*J. and E. Hall, Ltd.*

# More Birthday Messages

### FROM Thos. McLachlan, A.C.G.F.C., F.R.I.C.

My heartiest congratulations to FOOD MANUFACTURE on the occasion of its twenty-first birthday. FOOD MANUFACTURE was the first technical journal in this country concerned solely with the food industry, and it has kept in the forefront ever since.

The technical press supplies, in an attractive form, a summary of modern progress so that the busy man or head of a department can glean from its pages information on manufacturing and packaging problems.—*Ad multos annos.*

### FROM Maurice Batchelor

So FOOD MANUFACTURE is twenty-one. The reaching of this majority is an achievement which we shall all admire, and the food industry as a whole will be grateful for the long and successful record of pioneering work on technical food matters carried out by Mr. Leonard Hill and his food publications.

Many of us can throw our minds back to the early happy days of canning with its Canning and D.I.C.E. Clubs, where friends and competitors alike could meet on a social basis. The old Imperial Fruit Shows, which later also accommodated the canning industry, were always happy annual events at which we could count on the full co-operation of Leonard Hill and his company. Nowadays the old social contacts have to some extent been lost, although the necessity for co-operation during the war years has perhaps thrown us together much more, commercially, than was at one time anticipated in the industry.

Here's good luck to FOOD MANUFACTURE, and my personal congratulations to Leonard Hill.

### FROM E. H. Hallows

EVEN twenty-five years ago one could see that the day would come when Leonard Hill Limited would be one of the leading trade and technical journal publishers in the world. It is a truism to say that big oaks from little acorns grow, and in 1922 the whole establishment in Fleet Street was acorn in size. Up a flight of almost rickety stairs to one single room containing one telephone, a few desks, and four people, two of whom were more often out than in. But the enthusiasm was infectious. You knew the *Chemical Engineering Catalogue* would be something better than the chemical trade had ever had. And from an observation of Leonard Hill Limited over that twenty-five years the same old infectious spirit still persists. "A man's reach should exceed his grasp, or what's a heaven for?" was what Browning wrote many years ago. That, it always seems, is the directing genius behind Leonard Hill Limited. Genius is 99 per cent. perspiration and 1 per cent. inspiration. And both were there in large quantity. My memory of those earlier days and that office will always remain as a confirmation of the law of the survival of the fittest. Leonard Hill Limited always had its feet firmly on the ground; it knew where it was going and it has got there. The move to Thanet House, then to Stratford Place, were milestones on the road and symbolic of the energy, enterprise, initiative, and foresight of the directing brain of the business.

Experiment was linked with experience, and so Leonard Hill Limited showed always a young vitality and virility that enabled it not only to move with the times but to move ahead, and so be off to a running start when trade had assimilated its message and its purport.

It is a privilege to have seen all of this all this time from the outside in.

# Food Packaging

## Progress in 1947

FRANK ENGLAND

The year 1947 has not been a happy one in the packaging world. Restrictions, which it was hoped would be relaxed, have continued to operate, if anything with an even greater stringency. It is therefore not surprising, that, in the practical sense, 1947 has brought little that is new and nothing that is revolutionary, although interesting developments are taking place in food packaging.

IT is possible that the past year will be remembered for a development which may have far-reaching consequences, leading to nothing less than the predominance of British packs in every department of trade.

This development is the formation of the Institute of Packaging, which held its first regular meeting on July 24, when it was addressed by the Second Secretary to the Board of Trade.

It owes its existence to the fact that there were sufficient far-seeing men, some of them in food manufacture, who realised that, if some sort of body were not formed to prevent it, a wealth of new knowledge, new materials, and methods of packaging might become forgotten, and even irretrievably lost. This knowledge is of those packaging materials and methods which ultimately made it possible to ensure the arrival in perfect order (apart from enemy action and "acts of God") of everything that was needed to equip, maintain, and sustain our armies and fleets in all parts of the globe.

This was possible in spite of Arctic and tropical conditions, the effects of immersion in sea water, the attacks of insects, and a host of factors inimical either to package or contents, or both.

The Institute of Packaging exists, not only to preserve the wealth of knowledge gained under the stress of war, and contributed to by the best packaging brains of this country and the United States, but to help forward still further developments.

### Policy of Packaging Institute

The Institute is one of individuals, not firms, but they represent every aspect of packaging. The membership embraces industrialists, users of packaging, makers of packaging machinery, paper and board manufacturers, senior civil servants, and scientific packers.

The policy of the Institute is both long- and short-term. The long-term policy aims at the adoption of packaging standards and the development of educational facilities and recognised qualifications for packers.

The short-term policy provides for assisting users of packaging, and packers, in making the best of the limited raw materials that are available, and helping in the solution of packaging problems.

The adoption of packaging standards is expected to lead to packs and packaging methods that will reduce losses from damage or pilfering, and lead to a consequent reduction in insurance rates, which every food manufacturer who sends his goods to overseas markets knows are far too high.

During the year the report of the Working Com-

**The contrast between specimens of the old range at the back and a selection of the new packs in the foreground.**

*Courtesy Brother Bung Products.*

**The H.P. Sauce label has been redesigned for the export market.**

mittee on Packaging, set up by the Incorporated Sales Managers' Association, referred to in last year's review in FOOD MANUFACTURE, presented its report. The chairman of the Committee was Capt. A. Tickler. The presentation of the report before the annual conference in September produced considerable comment.

It declared that although the Committee had surveyed a mass of evidence since its formation in November, 1946, it was unable to make out a case in support of the contention that the export of British products had been retarded by a shortage of good quality packaging material.

## Lack of Initiative

This statement, on which food manufacturers will certainly have their own opinions, was followed by a declaration that while the packaging and presentation of British goods in export markets did not compare favourably with the presentation of those from other countries, there was evidence of a lack of initiative on the part of British exporters in seeking, with their designers, sources of supply of right packaging material which was still available in the country.

The report did not say so, but there can be little doubt that the criticism of lack of initiative was aimed at exporters who had chosen the short-term view of taking advantage of a sellers' market, and had sent out their goods in packaging which had no relation to prestige or the needs of presentation. In other words, they had used the cheapest material they could get away with!

Unfortunately, owing to pressure of the general programme, this report did not result in the discussion it deserved. Capt. Tickler and his committee knew there was disagreement with their unpalatable findings, but they stand firm on the report, which they claim they can justify to the hilt.

For many years the value of the package as an advertising medium has been impressed on manufacturers, with successful results from the advertising point of view. But now comes the head of the Atlantic Mutual Insurance Company of New York advising exporters not to use their export packages as an advertising medium. He contends that only the handlers see it, and it presents a great temptation to railwaymen, dockers, and other handlers of freight who might be anxious to acquire the particular brand of merchandise named on the package.

Since the war the Atlantic Mutual Insurance Company, like many British insurance companies, has been deluged with claims for theft and pilferage in transit. The American company is convinced from experience that a strong, well-strapped shipping package with no information on the outside as to its contents has a fair chance of arriving safely at its destination. This is an advantage, suggests the company, which far outweighs the rather remote benefits that might accrue from using the case as a medium for advertising.

It should be noted that these remarks by the director of an American insurance company apply only to bulk packages. They are not intended to refer to counter or shelf packs which, if the best use is to be made of them, should be planned as a definite link in the merchandising and advertising campaigns.

## Changes in Design and Pack

In this connexion it is interesting to note that, in spite of shortages and frustrations, some famous British lines are going in for re-styling of their designs and packs. An outstanding example is offered by H.P. Sauce products. In the case of H.P. Sauce itself, re-styling has involved the modernising of a label that has long been associated with the best. This always presents a tricky problem, yet not only has the old label been modernised, but it forms the basis of a "family" range,

relating to this famous leader, *viz.* H.P. Pickles, H.P. Piccalilli, and Midland Malt Vinegar.

The new designs are distinguished by the effective use of colour, simplicity, clarity, and a straightforwardness of presentation that suggests hygienic purity and the highest quality in the contents. There is both restraint and what might be termed "calling" power which the consumer cannot well miss.

Because it is a difficult and a dangerous thing to attempt the re-styling of a famous label, which in course of time has acquired a sense of tradition, a description in some detail of the way in which the task was tackled may properly find a place in this review.

It is important to note that the designs were made for a new range of H.P. Sauce products for export to world markets. The modernisation of the label was not begun until after a considerable amount of research had been done. The final design was the result of nearly sixty processes of evolution.

Six months were spent in experimenting in colour density and in the selection of pigments. These experiments had regard to the varying conditions of display, light, heat, and climate that would have to be met, together with a study of the colour preferences in various countries. At last the designers felt that they had succeeded in achieving a presentation that would suggest a modern product of the highest quality while retaining the atmosphere of the old pack. Whether they are right, time and the customer will tell!

**Research in Britain**

In the field of research, 1947 has to report progress in a number of directions. The Printing, Packaging, and Allied Trades Research Association has advanced a good deal in the accumulation of data for the moisture vapour resistance of commercial materials, and has developed standard test methods for water vapour penetration of packaging materials in so far as temperature and tropical conditions are concerned, both with creased and uncreased materials. Work has begun on the development of methods for testing highly resistant materials under cold storage conditions. Long-range work is proceeding on the permeation of gases. All these are matters of first importance to the food manufacturer.

A collection of standard moulds used in experimental work on the mould resistance of packaging materials has been well established, and a collection of insects for assessing insect-resistance is being cultivated. Experimental work with insects is expected to begin shortly for judging the efficacy of insecticidal treatment of materials and packages.

During the year two members of the Association went to Germany as members of a packaging team whose report will be published as a B.I.O.S. Report through the usual Board of Trade channels.

**American Research**

In the United States, packaging research has been carried on under happier conditions, since it is not hampered by the shortages and limitations that are our lot in this country. Two practical aims have been much to the fore. One of these is the necessity of getting down the cost of new materials developed for war purposes to a commercial basis. The other is to submit the materials to tests such as they must meet under commercial conditions.

First things must come first in America no less than in the United Kingdom, so much attention has been paid, as here, to devising standard tests, particularly with reference to the effects on packaging of light and heat and to their effects on contents. On these points a great deal of work is still to be done, both in America and by our own scientists.

**Tinplate Corrosion**

Turning to tinplate, which plays a major part in food packs, one of its biggest enemies is its liability to corrosion. Pores are inherent both in the material and in the methods of its manufacture. The Tin Research Institute has demonstrated that one prime cause of corrosion, which is "ridging"

**New designs for Vita-Weat.**

**Developed by the Sylvania Division, American Viscose Corporation, this six-in-one box is wrapped in moisture-proof heat-sealing viscose film.**

caused in manufacture, can be abolished, and if the method suggested can be adopted the cure of porosity will be well advanced.

Another line of attack prosecuted during the war resulted in the "Protecta Tin" treatment, an immersion method which results in tins remaining bright long after untreated plate has begun to rust away. An advantage of "Protecta Tin" treatment is that it produces an invisible film which is resistant to blackening by sulphur from meat, soup, and vegetables of various kinds.

Research into the development of different types of steels to meet the differing requirements of various kinds of food contents has been less promising, results sometimes being contradictory.

### Packaging for Export Markets

The insistence on ever-increasing export trade emphasises the importance of paying special attention to packaging for export markets.

The complexities of this subject are legion. Mention has already been made of heat and cold, humidity, tropical and Arctic conditions, moulds and insects, and colour preferences, to which may be added colour prejudices having their origins in religion, tradition, and legend. There are commercial traditions, legal and customs requirements, tariffs, all of which affect packaging. There is air travel and its special requirements. Where goods have to be taken over mountain passes on men's backs, packages must be within one man's carrying capacity. In other places, packages are required to be a little heavier than two men can carry easily—this to prevent theft! And so on.

However, the newcomer to export trade need not be dismayed. There are several channels of information open to him, such as the Export Group for his own industry, the F.B.I., and the Board of Trade. And there is always the specialist packer who should have all these points at his finger tips.

### Developments in Packaging Machinery

Some developments have been noticed in food packing machinery, but mostly of a relatively minor character. Cake-wrapping machines for bakers, and crimping machines to meet the growing demand for heat-sealing moisture-proof plastic film, and similar heat-sealing wrapping materials are being offered. But as the live sales manager for a machine-making firm says, British packaging machinery and machinery methods, compared to those adopted in America, are relatively sidelines.

Before 1939, the Ministry of Health, in conjunction with medical bodies, was trying to get legislation for the hygienic packaging of foods of certain kinds as exists in America. American legislation on these lines has been a great help to the manufacturer of food packaging machinery, but here the industry may not be large enough to influence the Ministry in this matter.

In present circumstances, and for a long time to come, this sales manager's assessment of the machinery position would seem likely to remain true. He makes another interesting point: hygienic packaging adds to expense of production, and until costs generally can be lowered this factor is likely to discourage the advance of such packaging, although interest in the subject was never greater.

### Paper Supply

The question of paper supply still remains difficult. Indeed, for the home market it is likely to get worse rather than better, owing to preference being given to the increasing demands for export packaging. The only thing that promises any real improvement in the supply position is coal exports to the Scandinavian wood-growing countries.

Attention is being given to a revival of the salvage campaign, the returns from paper salvage having fallen off a good deal compared with wartime collections, although the need for maximum salvage remains as great as ever. Many British paper-making machines, which have been idle for years, are still "under wraps."

In discussing future trends in the review of packaging in 1946, guarded hopes were held out for expansion in materials then in short supply, particularly in film wrappings. These hopes have been to some extent realised, but users do not yet

(*Concluded on page 238*)

# The Final Report on Patents

After spending some three years and six months or more on the job the Board of Trade Departmental Committee on Patents has published its Third and Final Report on the Patent Acts. The work has been thoroughly done, and its recommendations are drastic. The first Interim Report dealt with extension of patent term for war loss, the second with abuse of patent monopoly, patent litigation, and increase of the powers of the Comptroller as regards considering the subject matter of patent applications, and prior user in certain cases, also trial of infringement actions by his Court.

IN the absence of a written agreement between an employer and an employee inventor, neither of whom is entitled to the exclusive benefit of an invention, the Court should be able to apportion that benefit between them.

The term of a patent and the liability for payment of renewal fees should be reckoned from the date of filing the complete specification, but the date of filing the basic document, whether provisional, complete, or foreign specification (in convention cases), should be relevant for the purpose of overcoming an anticipatory document; however, the official novelty search should be carried forward up to the date of filing the complete specification. In the absence of intervening publication, disconformity between the basic and the complete specifications should not be an objection to grant.

Third party rights should be protected, in cases of extension of term or of regrant, by standard conditions except in special cases, and these conditions should be set out in the order regranting the patent.

War-time emergency legislation should be incorporated in the Acts. The provisions as to Crown compensation for Crown-user should apply to applicants for patents, to exclusive licensees, and to patentees or their licensees employed to manufacture the article.

Claims for substances prepared or produced by chemical processes or methods or intended for food or medicine should not be limited to the processes or methods described or to their obvious chemical equivalents, but substances found in nature should be excluded; mere mixtures should not be patentable when the result is simply the aggregate of the known properties of the constituents.

Co-owners of patents should only be allowed to assign any of their interest in a patent with the consent of their co-owners or that of the Comptroller; but they should be able to use the invention themselves or by their agents or contractors without the licence of the co-owners.

It should be possible to file a single complete specification including the subject matter of basic foreign applications filed in more than one country in a convention case and subject matter not included in any of the foreign specifications should be incorporable therewith, but the British subject matter should be entitled thereby to the British filing date. Disconformity between the basic foreign and the British documents should not be a ground for revocation with the recommended system of dating patents. Convention documents should not be published until acceptance of the complete specification.

Exclusive licensees should be able to take infringement proceedings in their own names and to obtain normal relief therefor.

A potential manufacturer of an article which might be covered by a patent, and who cannot obtain a satisfactory reply from the patentee that the article would not constitute an infringement, should be able to bring an action against the patentee for the purpose of obtaining such a reply.

A single body should be appointed to estimate the potential value of, and to take steps necessary for, the development and use of State-owned and State-subsidised inventions, which should be treated as public assets.

Where there has been unauthorised publication of an invention prior to the filing of the application for a patent in connexion therewith, this should not invalidate the patent granted thereon.

The Comptroller should be empowered to call for amendment of an application, or to revoke the patent granted on it, if anticipatory documents are brought to his notice by other means than the official examination in novelty or opposition proceedings. Furthermore he should have the power to insert a specific reference to an earlier patent in a later one, which is in force and appears on the face of it to be valid, if he is of the opinion a claim of the earlier patent would be infringed if the invention described in the later one is performed.

In cases of "prior grant" the applicant should be given the same latitude for amendment as in cases of "prior publication."

Lack of subject matter, and prior use, and wrong basic convention cases, should be additional grounds for opposition.

Where a wrong priority date has been claimed, if there has been no prior publication, opposition on this ground should have no worse effect than the loss of the priority date.

Where, without knowledge of the Patent Office, a company has ceased to exist or an applicant has died and the Office has sealed a patent to the aforesaid party the patent should be revoked and a re-grant made to the successor.

An extension of term should be grantable to an exclusive licensee, and there should be no doubt about extensions of term being obtainable both for merit and for war loss.

Provided the invention has not been anticipated, a patent of addition should be grantable even where no invention is shown over that disclosed in the parent patent. Provided the complete specification of the parent patent is filed no later than that of a patent or addition thereto, the relative filing dates of the provisional specifications in the two cases should not matter.

If a patent has lapsed through failure to pay the sealing fee it should be restorable.

An account of profits should be claimable by a successful plaintiff in an infringement action as an alternative to damages.

It should not be deemed to be a threat of an infringement action merely to notify the existence of a particular patent. It should be a defence to an infringement action that the alleged infringement was committed while a contract was in force containing a provision which is null and void under the Acts.

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# Short-Term Cold Storage of Fruit and Vegetables

PRACTICAL advice on short-term refrigerated storage over a period ranging from four to ten days is contained in a recently published leaflet. (Food Investigation Leaflet No. 9. "Entrepôt Cool Storage of Fruit and Vegetables." H.M.S.O. Price 2d. net.)

Recommendations are given for the specifications of cool stores in which temperatures ranging from 32° F. to 45° F. and a relative humidity of around 85 per cent. are maintained, with automatic control of temperature.

Details of storage temperatures for different fruits and vegetables are given, together with hints as to special treatment required for certain products. For ease of operation of the cool stores, the fruits and vegetables are divided into two classes, those to be stored at 32° F. to 34° F. and those to be stored at 40° F. to 45° F. Notes on tainting of one variety of fruit or vegetable by another in the store are also included.

## Food Packaging

(*Concluded from page* 236)

appreciate the wide range of materials that may be heat-sealed, for example, through chemical treatment of the packaging material during or after its manufacture. Some large manufacturers have evolved their own heat-sealing methods.

An interesting development in the production of plastic film was the Goodyear announcement last year of the commencement of the building of a new Pliofilm plant at Wolverhampton. Much is claimed for Pliofilm, which is a transparent rubber hydrochloride film. It repels or retains moisture according to the need of the product being packed. It is in itself moisture-vapour-waterproof. It can keep moisture out or hold moisture in. Heat-sealing provides a hermetically sealed package.

The material is said to be unaffected by atmospheric conditions or normal temperatures, and is unharmed by sealing, creasing, or wrinkling, is resistant to weak acids and alkalies, dirt, grease, moisture, mould, oil, vermin, and water. It is not easily punctured, torn, or abraded.

It is claimed to give a high degree of preservation to perishable fruit and to a wide variety of vegetables, among them celery, asparagus, broccoli, lettuce, cauliflower, and spinach. Meat loaves, which formerly lost 8 per cent. of their weight through dehydration in an earlier type of wrapper, were shown in market tests to lose less than three-tenths of 1 per cent. sealed in Pliofilm.

A new development, known as the "pressure pack" method, prevents rind formation and loss of weight in cheese, and Pliofilm is widely accepted for the protective packing of process cheese. Coffee can be kept fresh, it is claimed, for thirty days because the film allows the gas liberated by freshly ground coffee to escape while preventing the passage of water through the walls of the film.

Other food products for which this material is claimed to be suitable are cereals, confectionery, pickles, potato crisps, yeast, tea, fish, and frozen foods.

The year has seen considerable development in quick freezing, which may be expected to advance at a rapid rate, not only in relation to the food manufacturer, but in the production of small cabinets for wholesalers and retailers. Developments in the field of quick-frozen foods can but hasten experiments already being carried out on packaging materials designed to meet the requirements of quick freezing.

Other forms of plastic materials continue to advance in favour in the packaging world, particularly in respect of closures for all kinds of bottles and containers. Plastics are bringing to packaging many new properties, but they have their disadvantages, and expert guidance should be sought in their application, particularly to food packaging.

# British Industries Fair, 1948

## DEVELOPMENT OF NEW MARKETS

Now established as the world's greatest national trade fair, this year's British Industries Fair, being held at Birmingham and London simultaneously from May 3 to 14, takes place at a critical time in the drive for exports. Manufacturers representing the heavier industries at Castle Bromwich, Birmingham, number 1,100, while 2,300 firms are showing products of the lighter industries at Earl's Court and Olympia in London. An exceptional number of exhibits show inventive genius and technical skill, directed to the development of new markets. Post-war research in overseas markets and war-time developments in industrial technique have now had their effect on production, while there is a marked improvement in manufacturers' ability to fulfil orders.

### BIRMINGHAM

A wide range of plant and equipment is being shown at the Birmingham Section (Castle Bromwich). Steam jacketed pans fabricated in stainless steel to eliminate the possible contamination of the product being cooked are being exhibited by Metal Propellers, Ltd., on stand D.748 and W. P. Butterfield, Ltd., on stand A.525. Sheet metal working machinery and machine tools shown by F. J. Edwards, Ltd., at stand D.411 include punching presses, pan folding models, inclinable power presses and a semi-automatic double seaming machine designed for round cans and other containers.

In addition to a thermostatically controlled gas-fired galvanising bath and a universal dyeing machine at stand D.642, Thompson Brothers (Bilston), Ltd., are displaying a section of a circular insulated stainless steel tank with polished interior surfaces which may be used for the storage or transport of liquids and food commodities.

Five revolving dioramas, employed to illustrate heating services, air conditioning, radiant warming and drying plant, are a feature of the exhibition of the Richard Crittall Group at stand B.300. Models of bottle washing, chemical driers and automatic pottery plant demonstrate methods of operation, while catering equipment is also being shown.

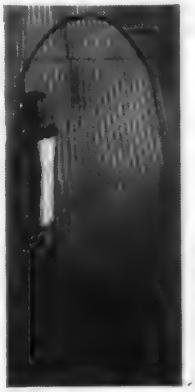
### Fuel

At stands C.619 and 518 the British Gas Council are showing several interesting examples of the way in which industry makes use of gas as a fuel. Their main exhibits illustrate four processes, namely radiant heat-drying showing flat panel and tunnel types of plant, file finishing, bolt heating, and die casting. Two exhibits illustrate the successful application of gas radiant heating. There are few industries which do not necessitate the use of metal which has to be protected by paint, and the new method of drying has enabled the drying time in many instances to be reduced from hours to minutes.

### Pumps and Pumping Units

Constructed of stainless steel and using a non-contaminating rubber stator for food and beverages, the pumps being shown by Mono Pumps, Ltd., at stand D.716 can be used for handling meat paste, soup, ice cream, fruit juices, and other food products. A demonstration unit provides an opportunity to appreciate the hypocycloidal motion of the pumps which can be applied to brine injection for curing bacon and ham.

On stand C.604 Sumo Pumps, Ltd., are exhibiting their submersible electric pumping units. The units consist of a single or multi-stage vertical centrifugal pump directly coupled to and mounted above an A.C. electric motor designed to enable the unit to operate when completely submerged.

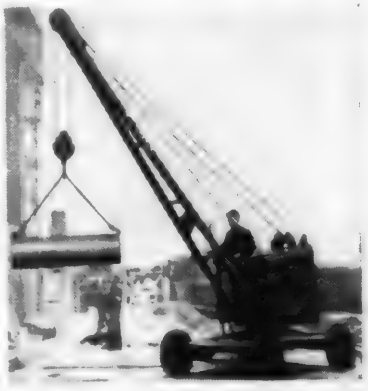


### Mechanical Handling

Designed and produced by Eccles (Birmingham), Ltd., the exhibits on stand D.628 include stillages of various types and lifting platforms for stores use. An important feature of the component, sack and general purpose trucks also being shown is the use of basic components which are identical in design and thus enable quick assembly and facilitate large production.

An Eccles general purpose truck.

A complete range of cranes are being demonstrated at stand D, Outdoor and D.604 by K. and L. Steelfounders and Engineers, Ltd., the largest of which is designed to lift up to 5 tons. A smaller model which represents a new departure in crane construction combines the compactness of the light non-mobile hand crane with the advantages of the fully mobile power-operated crane.



The Jones "Super 15" crane.

### Scientific Instruments

**Portable *p*H meter.**

In addition to their stand at Olympia, Marconi Instruments, Ltd., are displaying the bulk of their industrial equipment on stand D.507 at Birmingham. Among this equipment may be mentioned a portable, direct-reading battery operated *p*H meter covering the range 1 to 11 *p*H. The instrument is completely self-contained, the dry batteries being fitted internally and the glass electrode system stowed in a cavity at the top of the case, and it may be used in conjunction with any of the standard laboratory types of electrode.

### Varnishes and Lacquers

Aiming at demonstrating colour in industry, Arthur Holden and Sons, Ltd., are exhibiting on stand A.424 specimens of food can lacquers, super zinnatine and super sulfatine as well as tin box varnishes and coatings. Particular emphasis is being laid on a new machinery paint which resists oil, grease, and industrial cutting suds and coolants.

### Electrical Equipment

On stand C.511 in the Electrical Section the British Thomson-Houston Co., Ltd., are showing a variety of products representative of their electrical plant and equipment, incorporating recent developments in electronics, spot and seam resistance welding control, H.F. heating, and a Mazda infra-red drying oven.

### Industrial Brushware

A wide range of brushware is being exhibited for the first time by the Kleen-e-ze Brush Co., Ltd., on stand D.105. In particular may be mentioned brass wire scratch brushes, plate suds and slurry brushes as well as special industrial types such as bench, boiler tube and wall dusting brushes, and a flexible overhead pipe mop.

### Industrial Compounds

Exhibits of Thomas and Bishop, Ltd., at stand D.143 include compounds for cleaning and tinning dirty metals in one operation, boiler scale eliminating, water-softening, belt treatment and roof weather-proofing. Metal-to-metal jointing which is unaffected by temperature, pressure, or corrosive action, jointing paste, furnace cements, cored solders and kneadable metallic packing are also to be seen at this stand.

### Conveyors

Prominent on stand D.522 is an installation combining powered belt and gravity roller conveyors made by J. Collis and Sons, Ltd., while a selection of stackers and trucks is also to be seen.

### Protective Ointments

Protective ointments for industrial workers and a dispenser for issuing the compounds are being shown by Rozalex, Ltd., at stand D.706.

## EARL'S COURT

### Packaging

Several new developments in packaging are to be seen on stand S.31, where Reads, Ltd., are introducing their new pilfer-proof closures for drums and tins, and a seamless drawn metal package is being given its first public display in this country. A drum with a flexible plastic bag liner which will appeal to packers of beers, acids, and fruit juices is also on view, while an exhibition of colour photographs indicates the possibilities of colour printing on ferrous and non-ferrous metals.

### Plastics

Of special interest to packers of perishable foodstuffs is the production by Imperial Chemical Industries of a high-grade plastic film which has high water impermeability, tear resistance, and heat-sealing properties. Other exhibits on stand Q.42 include plastic pipes for conveying beer, water, and chemicals as well as developments such as a new industrial inspection lens, transparent machine guards, lighting fittings, and various contributions to industrial welfare.

### Barrier Creams

Anti-dermatitis protection is a necessity in most factories and a cream which forms a "glove" over the hands and arms, effectively sealing the skin against irritant substances is being shown on stand P.77 by Sternol, Ltd.

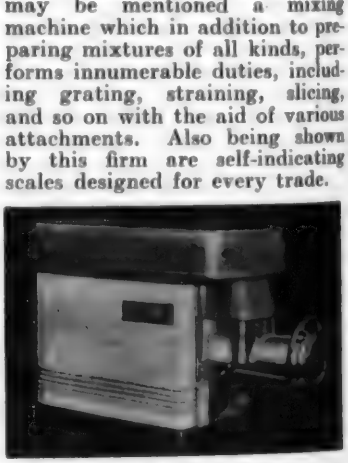
At the same stand the firm will be displaying a full range of tanning oils.

### Colours and Flavours

Colours for use in the food industry are being exhibited at both the Earl's Court and Olympia sections. Although showing some of their products in the chemical section at Olympia, W. J. Bush and Co., Ltd., have reserved their display of selected flavours and colours for the various branches of the food industry for their Earl's Court stand T.22.

### Slicing Machines

Developed by Swift and Swallow, Ltd., a large range of electrically driven machines for slicing, mincing, and chopping are on view on stand T.24. In particular may be mentioned a mixing machine which in addition to preparing mixtures of all kinds, performs innumerable duties, including grating, straining, slicing, and so on with the aid of various attachments. Also being shown by this firm are self-indicating scales designed for every trade.



**Swallow electric mincer.**

## OLYMPIA

### Chemicals and Chemical Machinery

Designed to give equal prominence to two main products—precipitated calcium carbonate and citric acid—stand B.7 of John and E. Sturge, Ltd., displays a mural painting symbolising the chemical processes involved in the conversion of limestone for use in different industries, while another section comprises photomicrographs of mould cultures.

Various chemical and pharmaceutical machinery, including tablet machines, mixers, coating pans, and an oscillating granulator are being shown by Manesty Machines, Ltd., at stand E.99. They are also showing automatic water, gas, electric, and steam stills.

The uses of their chemical products in industry, with advice to consumers through the medium of technical personnel and literature, is the theme of the display of the Mond Nickel Co., Ltd, at stand B.10. Among the consumer industries featured may be mentioned fat hardening, showing the company's products as catalysts in the production of edible and confectionery fats, and fats for general use.

### Collapsible Tubes

Samples of a new range of aluminium collapsible tubes which can be decorated with the usual enamel and coated internally with a lacquer suitable for food products should attract all those interested in packing food pastes in tubes. Made from an especially pure metal, the tubes have all the flexibility of pure tin, and are being shown together with pure tin collapsible tubes at stand E.98 by the Flexile Metal Co., Ltd.

### Stationery

Among exhibits in the Stationery Section at Olympia is included a comprehensive range of highly coloured cartons for diverse types of foodstuffs, display outers, cut-outs, printed photo litho offset, and letterpress process designed by Alfred Eva and Son, Ltd., and shown on their stand, M.132.

A model of an average stationer's shop complete with a display of miniature reproductions of their products is an interesting exhibit at stand M.61 of Samuel Jones and Co., Ltd. Demonstrations are also being given of a new moisture-controlled automatic sealing machine, together with a post-war parcel carrier, while many new grades of adhesives and special heat-fix papers used for sealing all kinds of products without the use of water or adhesive are being shown.

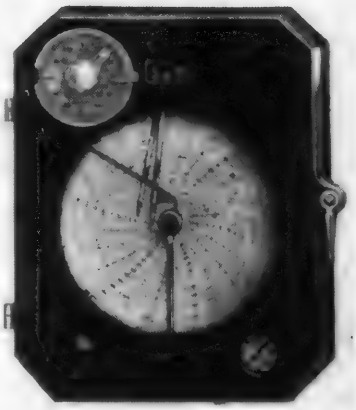
### Phosphorus Compounds

Manufacturers of phosphorus and its compounds, Albright and Wilson, Ltd., are showing on stand B.25 an arrangement of figures dressed in appropriate costumes and indicating the application of various phosphates in industry. Displays of the uses of recently developed chemicals belonging to the group of organic phosphorus compounds which act as insecticides, additives in lubricating oils, and so on, are also being given.

### Scientific Instruments

A series of laboratory standard moving coil and dynamometer instruments, including ammeters, voltmeters, and wattmeters, as well as photographic exposure and electricity meters, time switches, synchronous motors, and other instruments, are being shown by Sangamo Weston, Ltd., at stand C.90. A new exhibit of interest is the S.85 photometer of the photoelectric type, which is designed for the measurement of interior illumination values.

**The S.85 photometer.**



**"Fulscope" process time controller.**

The exhibits of Short and Mason, Ltd., at stand C.86 cover a wide range of instruments for indicating, recording and controlling temperature, pressure, humidity, rate of flow, liquid level, and specific gravity. Two of these exhibits, a buoyancy type liquid level instrument and a time controller invaluable for batch processing work, are being shown for the first time in this country.

### Colours and Flavours

A range of guaranteed edible colours, featured by Williams (Hounslow), Ltd., stand B.45, is designed to satisfy the needs and regulations of the home and overseas markets. The firm are also proffering advice regarding the food regulations in force in the colonies and most foreign countries.

In addition to liquid essences and flavours, A. Boake, Roberts and Co., Ltd., are exhibiting their powdered flavours specially prepared for fatty mixes at stand B.13.

### Emulsifiers

An edible cellulosic thickener which, dissolved in water, forms inert mucilages or gels capable of being used as thickening agents, emulsifiers, and fat extenders, as well as a cellulosic derivative having characteristics of high-grade tragacanth, but having the advantage of ready availability, will be of interest to the food industry. Both these products, together with illustrations of their uses, will be found on stand B.11 of the Watford Chemical Co., Ltd.

# News from the Industry

## Emulsifiers

Redesigned in 1947 to incorporate up-to-date features, emulsifiers and homogenisers manufactured by Ormerod Engineers, Ltd., are extensively used in various food processes such as the preparation of sauces, mayonnaise, and numerous bakery emulsions.

All parts of the new Q.P. power emulsifier which come into contact with the mix are made of stainless steel or special non-corrodible alloys which can be easily removed for sterilisation. The electric motor can be replaced with a "V" belt pulley driven by an ordinary base mounting motor on slide rails integral with the base, making it a simple matter to adjust capacities downwards, and this has proved useful where continuous processes are running, as the emulsifier can operate as a metering device. To this end the machine may be installed in the lower part of a factory where materials are delivered and, after treatment, it will deliver to any reasonable height for other processes to be completed on higher floors.

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## Metal Packaging

The factories of Reads, Ltd., of Liverpool are equipped with the latest tin can and drum making plants, there being few metal packages which cannot be supplied.

Reads are continually developing new types of metal containers and recent innovations include their new pilfer-proof tins and the "Ringseal Neck" for use on tins and cans and steel drums. There will also be introduced to this country in the near future an improved seamless drawn metal package, and a combination drum fitted with a plastic liner for specialised packing, including beers and ales.

The firm's range of plant, tools, and dies is sufficiently comprehensive to cater for the supply of all shapes and sizes of tins, cans, and drums, whatever the commodity to be packed, with the major exception of cans for food processing. Their drum plant specialises in air and liquid-tight

**The Nutrasac drum with flexible plastic bag liner.**

full-aperture drums, the result of many years' experiment and development.

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## Health Congress at Harrogate

The order of proceedings for the forthcoming Health Congress at Harrogate has now been announced by the Royal Sanitary Institute, as follows:

*Monday, May 24.*

3.0 p.m. Inaugural Meeting. Welcome by the Worshipful the Mayor of Harrogate, and inaugural address by the President of the Congress, the Right Hon. Lord Inman, P.C., J.P.

*Tuesday, May 25.*

10.0 a.m. Meetings of Sections and Conferences:
- Section A—Preventive Medicine.
- Section B—Engineering and Architecture.
- Conference 3—Sanitary Inspectors.
- Conference 4—Health Visitors.

*Wednesday, May 26.*

10.0 a.m. Meetings of Sections and Conferences:
- Conference 1—Medical Officers of Health.
- Conference 2—Engineers and Surveyors.
- Conference 3—Sanitary Inspectors.

*Thursday, May 27.*

10.0 a.m. Meetings of Sections a Conferences:
- Section D—Maternal and Chi Health.
- Section D—Veterinary Hygiene.
- Section F—Housing and Tow Planning.
- Section H—Hygiene in Industry.

*Friday, May 28.*

10.0 a.m. Meetings of Sections an Conferences:
- Section C—Maternal and Chi Health.
- Section D—Veterinary Hygiene.
- Section E—Food and Nutritio (in conjunction with Fo Group, Society of Chemic Industry).
- Section G—Tropical Hygiene.

Mayoral Receptions will be hel on the evenings of Monday an Tuesday, and the Congress Dinne will take place on Thursday even ing. For the afternoons of Tues day to Friday, inclusive, an at tractive programme of visits ha been arranged by the local com mittee.

About forty-four addresses and papers will be delivered and dis cussed at the Congress.

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## B.S.I. 1947 Yearbook

The Yearbook of the British Standards Institution, which has just been published, gives a subject index and a synopsis of each of the 1,400 British Standards now current. These standards have been prepared by representative committees of fifty different industries. Lists of members of the General Council, the Divisional Councils and the Industry Committee of the Institution as well as other useful information about its work are also included.

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## British Refrigeration Association

At the invitation of the Council of the British Refrigeration Association, the following have accepted office for the year 1948:

*President*: Lieut.-Colonel Lord Dudley Gordon, D.S.O.

*Vice-Presidents*: Sir Samuel R. Beale, K.B.E.; Kenneth Lightfoot, O.B.E.; and A. M. Allan.

### Centrifugal Separators

During the past twenty-one ears the field of application for trifugal separators has grown ormously and it has been the olicy of the Alfa-Laval Co., Ltd., o study the requirements of pecific industrial processes and esign centrifuges accordingly.

Centrifuges form a vital part of ery many industrial processes—ontinuous separations of liquids nd of solids cut out tankage pace and settling periods, reduce osses, and ensure a higher uniformity and purity of product. A ypical example of special nozzle eparators for discharging solids ntinuously is in the starch instry, where long settling periods n tables are eliminated and tarch is produced in less than ne hour instead of twenty-four ours. Continuous separation of east, vegetable protein, fish, and egetable oils, is carried out in he same way.

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### Can Sealing Compounds

Maintaining their policy of cooperative research for the formulation of better can sealing compounds for a wider range of uses, Dewey and Almy, Ltd., have expanded their business to include compounds for cans, caps, pails, drums, fluxes, seam dopes, and lubricants. During the war they built a self-contained factory to ensure continuity of supplies of sealing compounds and fluxes to can makers and are now concentrating on research and development to use only British raw materials to meet the growing needs of the industry and export trade.

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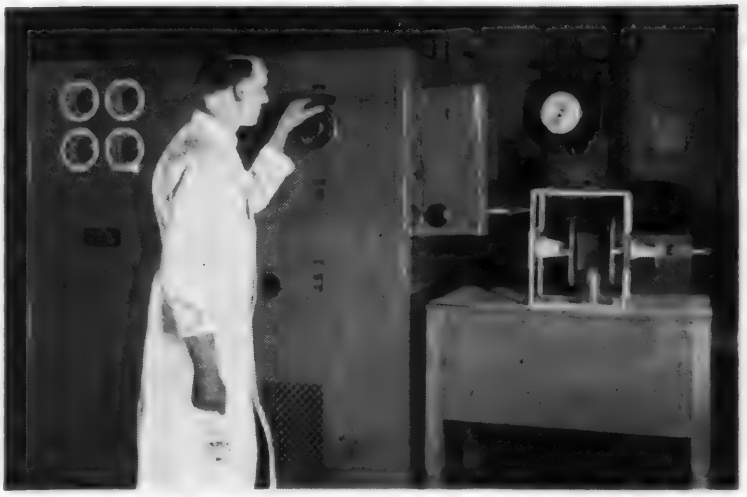
### Utensil Washing Machines

The introduction of their food utensil washing machines by Dawson Bros., Ltd., many years ago has done much to promote the standards of hygiene in the food industry. They design and build washing machines for all sizes and shapes of bottles, jars, tins, cans, and the moulds, trays, basins, and boards used in the processes of their manufacture. In addition Dawson Bros., Ltd., supply metal parts ranging from small units and bolts to complete engines. Their dish-washing machines are installed in many hotels, works canteens, and on Britain's liners and battleships.

# High Frequency Baking

## PROSPECTS OF COMMERCIAL INSTALLATION



**A 5 kilowatt high frequency generator. On the right a cake is being baked between electrodes.**

A survey of the present state of knowledge on the use of high frequency heating for baking, outlining its special features and difficulties and the possibility of practical application on a commercial basis was given on March 11 by Mr. L. D. Price, B.Sc., A.M.I.E.E., of the General Electric Co., Ltd., under the auspices of the Unilever Bakery Service.

The lecturer first explained the nature of high frequency heating and how its method of application differed radically from all existing methods used in the baking industry. This was followed by a description of various results obtained on a laboratory scale which were illustrated by demonstrations on a 5 kw. H.F. set. Judged purely from a technical point of view some of these applications, such as the baking of bread and cake and the melting of chocolate coverture, showed some promise, while others had not yet been successful. Mr. Price stressed the big gap that lies between a successful laboratory experiment and a practical commercial installation. He emphasised that the economic factor needs careful consideration, but as there was no experience of H.F. baking on any scale to serve as a guide, it was not possible yet to give an exact analysis of the economic outlook. Rough calculations showed, however, that the cost of the H.F. generator equipment was such as to leave it open to doubt whether H.F. baking would become a commercial proposition—even assuming that all technical difficulties could be overcome.

On the other hand, for some ancillary processes in the baking trade such as the thawing of frozen egg where the power requirements would be relatively small, the use of high frequency heating might prove attractive.

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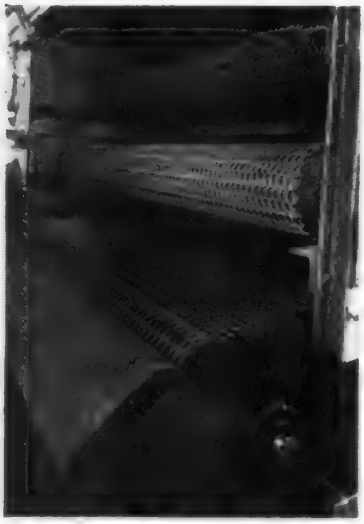
### Container Recovery Service

Originated in 1940 by Lever Bros. and Unilever, Ltd., for the collection and return of their used wood and fibre-board containers, Container Recovery Service has been since widened to include other large manufacturers, and participants now number approximately 100 firms, all of which are manufacturing rationed and essential products.

The service operates on a non-profit-making basis, and its average weekly collection of containers is now well above the million mark, which means a considerable national saving in purchase of raw material from hard currency areas.

### Woven Wire Belting and Conveyors



An exhibit at the recent Mechanical Handling Exhibition consisted of a working demonstration of a woven wire belt conveyor with vertical bucket elevator manufactured by The British Wedge Wire Co., Ltd. Other complete conveyors were depicted in large photographs on folding panels on the rear wall of the stand with a sample of the belt used underneath each.

### Food Products

During the last twenty-one years many interesting new products have been introduced to the food industry by Fredk. Boehm, Ltd. First was invert sugar which they imported from the U.S.A. under the trade name of "Nulomoline"—now made in this country and marketed under the name "Invertol." Then came yeast invertase, also from the U.S.A., but now made here, used for producing soft flowing cream centres in chocolates.

Lecithin ("Emulgo") was first introduced to the chocolate industry and subsequently for the confectionery, bakery, margarine and other industries. Until 1939 it was made in Germany, but during the war J. J. Bibby and Sons, Ltd., of Liverpool, started production for Fredk. Boehm, Ltd., who can claim to be the pioneers of lecithin in this country.

In 1934 the manufacture of "Protex" (hydrolysed protein) was started. This is a standard ingredient for many articles of food. Shortly afterwards "Yeatex," a pure yeast extract, produced by an associated company, The Trent Yeast Extract Co., was introduced to the trade.

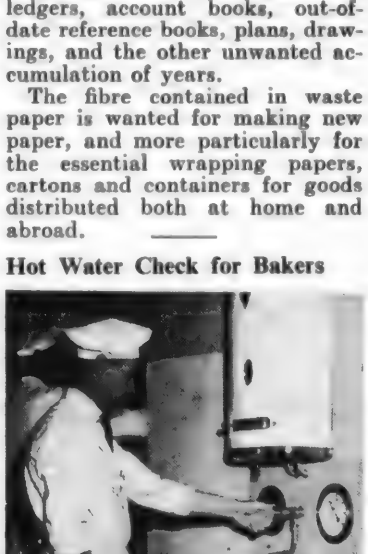
Another associated company, the British Chlorophyll Co., started the production of carotene and chlorophyll in 1939.

### Waste Paper Salvage

In view of the serious paper position there is an urgent need to increase the salvage of waste paper by 100,000 tons before midsummer. To help achieve this it is essential to organise an intensive effort among business houses, industrial and manufacturing concerns, professions, institutions, etc., to induce them to clear out old documents, correspondence, ledgers, account books, out-of-date reference books, plans, drawings, and the other unwanted accumulation of years.

The fibre contained in waste paper is wanted for making new paper, and more particularly for the essential wrapping papers, cartons and containers for goods distributed both at home and abroad.

### Hot Water Check for Bakers



An experimental device for control of quantity and temperature of water used for dough-making has been tested in London. The result of direct co-operation between a baker and a water-heating engineer, the machine eliminates the more laborious methods of measuring the two factors.

### Gumstrips and Labels

Printed coloured gumstrips manufactured by Samuel Jones and Co., Ltd., enable producers to utilise the free space on packages and containers for advertising, while the introduction of odourless gummed tape is a feature of special interest to the food packing industry. In addition the firm produce a wide range of gummed papers for labelling and branding food products as well as machines for moistening labels and sealing tapes.

### Advances in Food Equipment

Some striking new plant has been produced by the Kestner Evaporator and Engineering Co., Ltd., during the past two decades, one of which was the multi-circulation high vacuum climbing film evaporator for fruit juice concentrates, using a system of ester recovery which was patented in 1937 following work that was commenced on apple juice during the 1914-1918 war. This system of concentration has also made possible great improvements in the flavour and palatability of coffee essence and coffee powder. The latest evaporators for milk are being built on the climbing film principle, with multiple effect calandrias and vapour re-compression to ensure maximum steam economy.

The increase in size of modern dairy equipment may be instanced by a new spray drying insulation for milk products which the company is now erecting, having an evaporation rate up to 2,240 lb. of water per hour.

The Kestner Triplex tunnel system, which was used by four large food dehydration factories during the war, is now finding new applications for the treatment of food products which must be dried under closely controlled conditions of temperature and humidity.

An entirely new system of drying some food products such as starch is found in the Thermo-Venturi Drier, first put into commercial use by the Kestner company in the early days of the war. Some outstanding installations handling starch have been in use for some years now and new applications for this drying system are constantly being found in the food industry.

## Installation of Processing Plant

The first aim of a new engineering company, Food Installations, Ltd., is to contribute to the export of British refrigeration equipment and food processing plant to secure foreign exchange. The second, equally important, is to aid the development of food processing industries within the sterling area, and thus reduce the quantity of food to be imported from hard currency countries.

This company has the sole British rights to certain American continuous quick freezing processes, which are gradually supplanting the original batch techniques. Further, it acts as co-ordinating agent for several leading British manufacturers of refrigeration equipment and food machinery. In approaching its problems, Food Installations seeks to cover the whole range from the initial processing plant down to the retail end, and aims to provide complete factories, including architecture and engineering, design and construction of cold stores, refrigerated transport, and display cabinets.

At present a quick freezing plant for Belgian fishing interests, and a fruit freezing plant in England are being constructed, while other projects are under investigation.

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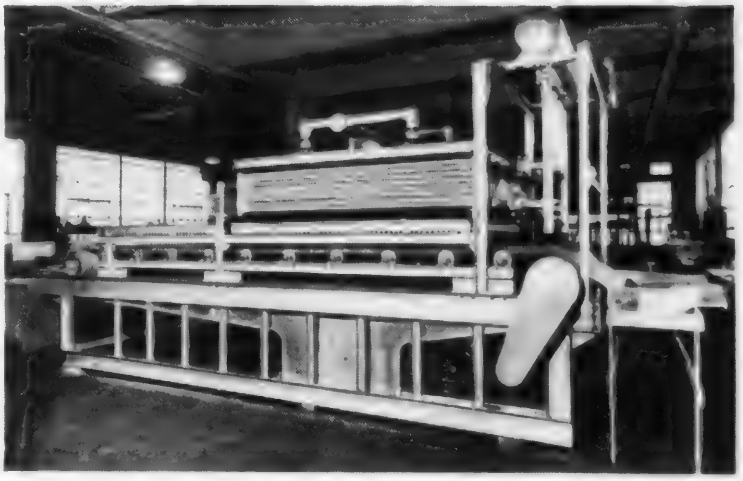
## Food Handling Equipment

As manufacturers of food handling equipment, George Scott and Son (London), Ltd., have advanced a great deal in the last twenty-one years, and in their endeavour to keep abreast of the times they have designed an evaporating plant which to a great extent is built as standard in stainless steel. In connexion with evaporating plants, great improvements have been made in steam economy, the most interesting being the application of thermo-compression to many standard type units. This system gives a steam and water economy comparable with double effect working, with a lower capital cost and considerably less cleaning.

Great strides have also been made in perfecting the construction of spray drying plant, which is fast becoming a standard equipment for the production of powdered foodstuffs.



**A continuous fruit freezer installed by Food Installations, Ltd.**

## Flour Milling Pioneers

The British manufacturers of the Entoleter centrifugal machine for destroying insect pests in foodstuffs, Henry Simon, Ltd., have other activities, which touch the handling and preparation of food for most people in Britain and for even larger numbers in other countries throughout the world.

Henry Simon, founder of the firm, was the pioneer of automatic roller flour milling in Britain. In 1878 he built the first fully automatic flour mill in this country, and his firm has never lost its early lead in the design and installation of complete flour milling plants.

Having played a great part in the development of the flour milling industry to its present high pitch of efficiency, Henry Simon, Ltd., are prominent as contractors for the huge grain handling and storage installations that collect grain at ports and railheads in the producing countries, and load and unload the grainships of the world. They are also large-scale manufacturers of machinery used for grinding, sifting, and mixing operations in other branches of the food industry.

While Henry Simon, Ltd., have been rendering these services to the suppliers of Britain's food, Simon-Carves, Ltd., another of the half-dozen or so companies in the Simon Engineering Group, do work of equal importance to the country's heavy industry.

## Colloid Mills

Since the inception of their product some twenty-five years ago, Premier Colloid Mills, Ltd., have accumulated a great deal of experience in food processing on both sides of the Atlantic. Produced in various forms, their mills may be used where processes involving intimate mixing and emulsification, fine dispersion of soft solids, and purification of chemicals by selective emulsification are required.

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## Automatic Weighing and Packing Machines

Over forty years ago the name of the Pneumatic Scale Corporation, Ltd., originated from the manufacture of one of the first automatic weighing machines, controlled by compressed air. This first successful labour and time-saving operation and the present-day automatic machines, such as carton feeders, bottom sealers, top closures, and tight wrappers, have all been designed and developed to meet the demand for clean packaged goods.

Many other machines have also been developed, including the double package maker, which makes a package within a package. Other equipment includes inverted air cleaners, vacuum fillers, screw cappers, and labellers, which handle a wide range of bottles at speeds from 40 to 120 containers per minute.

## Appointments

Mr. J. F. Noble has recently joined the staff of T. Harrison and Co. as outside representative.

Mr. Paul Reilly has joined the Council of Industrial Design as Public Relations Officer in charge of promotion and publicity.

## Nursery Day at East Malling

The programme for Members' Day at East Malling Research Station on March 11 was devoted mainly to the propagation of rootstocks and the raising of young trees. The proceedings began with a demonstration by Mr. R. J. Garner of the methods of stooling and layering in use at the Research Station. The party then moved to the main rootstock nursery, when Mr. Garner showed propagating beds of the main commercial rootstocks, and detailed special treatment required by each to get the best results.

A brief account was given of the research in progress on propagation by Dr. E. S. J. Hatcher, who dealt chiefly with propagation by cuttings. He stressed the importance of the condition of the parent plant from which the cutting came before dealing with the possible effects of hormones in accelerating rooting. The research has not yet progressed far enough to be able to make definite recommendations, but he had hopes that propagation by cuttings might become a practical proposition for many of the stocks in use today.

Following the opening ceremony of a new range of farm cottages the members assembled at the stock yard, where Mr. W. Alexander described his method of composting straw with the help of bullocks. Mr. Alexander was followed by Dr. H. B. S. Montgomery, who gave details of how Mr. Alexander's method was used at the Research Station.

The day's programme concluded with a visit to the tree nursery, where stocks bedded in and lined out for budding were seen and the operations of budding and grafting were demonstrated. Mr. T. V. Dixon, the nursery foreman, stressed the essential points for securing successful bud takes and well grown maidens.

## To Leave Batchelor's

All his old friends will be extremely sorry to hear that Mr. Arthur Batchelor has resigned his Directorship of Batchelor's Peas, Ltd., after a period of nearly twenty-one years in their service.

He first started his career as a junior salesman, later becoming the sales manager and sales director, and finally production director.

He was very widely known throughout the whole of the fruit and vegetable and grocery trades, and the good wishes of all his friends will go with him in his new appointment.

He feels that he would like some greater scope for his enthusiasm and initiative, and has been appointed managing director of the Swaffham Preserving Co., Ltd., Swaffham, Norfolk.

## Institute of Packaging

At a recent meeting held in Manchester the formation of a provincial branch of the Institute of Packaging was considered by local members and formally inaugurated. Until such time as other branches are formed in the north the new branch will be called the Northern Branch.

A committee of seven members has been elected to organise the activities of the branch and a provisional programme has been drawn up. Members will meet once a month to hear papers read by packaging executives.

The present members of the committee are as follows: Mr. H. C. Wild (Bibby and Baron, Ltd.), Mr. E. S. Jones (Poland and Gardner, Ltd.), Mr. J. Blair (Tate and Lyle, Ltd.), Mr. W. Davis (E. Griffiths Hughes, Ltd.), Mr. J. Horrocks (Lloyd's Packing Warehouses, Ltd.), Mr. A. Candlin (Reed Bros.), Wing Cmdr. H. E. T. Crocker (Vernon's Industries, Ltd.). Mr. A. F. Much (I.C.I.) has been elected hon. secretary and treasurer.

## Belfast Office

The address of J. H. Fenner and Co., Ltd., in Belfast is now 1, Havelock Street, Ormeau Road, Belfast. The telephone number and telegraphic address is still Belfast 25409.

## New Branch

The goodwill and business of Ogden and Cunliffe, the long-established Manchester engineering firm, has been purchased by Spirax Manufacturing Co., Ltd.

Added to the Spirax range as a result of this development, is the "Ogden" patent automatic pump which is widely used for lifting condensate to a higher level when discharge pressure is very low and is in considerable demand for an increasing number of condensate recovery schemes. The pump is used also for pumping petrol, oil, and various process liquors, including caustic, ammonia and others.

Mr. F. J. Cunliffe will continue in charge of technical management of this new branch with the backing of the existing technical organisation of the Spirax Co.

## U.S.A. "Friendship Train"

At New York, final stopping place of the "Friendship Train," which made a coast-to-coast journey across the U.S.A. to pick up food parcels given by Americans as a gesture of friendship and help to the citizens of Europe, the organisers were faced with the problem of transporting 200 wagon loads of food across the Atlantic for distribution in Europe, without waste.

A solution was provided by Mr. P. W. Litchfield, chairman of the Goodyear Tyre and Rubber Co., who put the entire Pliofilm Packaging Organisation at the disposal of the authorities, as a result of which all the food, including vegetables, flour, fruit, sugar, and rice arrived in perfect condition.

## Obituary

It is with regret we announce the death of Mr. J. Armstrong, manager of Walworth, Ltd., Glasgow Branch, who died on March 17 at the age of 51 after a short illness.

## Company Meeting

In his statement presented at the forty-ninth ordinary general meeting of J. and E. Hall, Ltd., the chairman, Lord Dudley Gordon, said that refrigerated cargo vessels accounted for a great volume of marine refrigeration. The carriage of quick frozen foodstuffs presented an increasing demand, though as yet on a small scale, to ship owners.

The growth of quick frozen foods in this country had increased the demand for storage and the provision of refrigeration generally to the food industry had affected the whole range of refrigerating machinery from the largest to the smallest sizes.

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## Biscuit Merger

Two leading firms in the biscuit industry, both of which originated in Scotland in the early nineteenth century, have agreed upon a financial amalgamation. Macfarlane, Lang and Co., Ltd., and M'Vitie and Price, Ltd., have registered the formation of a new private company, United Biscuits, Ltd., with a capital of £3,500,000, to acquire all the interests of the two manufacturing concerns. The registered office of the new company is in Edinburgh, and the directors are: John E. Macfarlane, Robert F. Macfarlane, William W. Macfarlane (directors of Macfarlane, Lang and Co., Ltd.); Peter G. Macdonald, W.S., Hector Laing, Peter M. Shaw, John B. Langlands, James A. M. Thomson, M.C., C.A. (directors of M'Vitie and Price, Ltd.); and John R. Young, C.A.

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## Booklets Received

A successor to *Monel Notes*, the pre-war publication of Henry Wiggin and Co., Ltd., *Wiggin Nickel Alloys*, the first of the new series to be published monthly, contains articles on the fabrication of combustion chambers for jet propulsion engines, the pickling of steel, searchlights, riveting, hydraulic control pipe lines in aircraft, and electrically heated pads and blankets.

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Flameproof propellor fans for use in cellulose paint spraying booths and other places where the air may contain inflammable vapours, propeller fans for industrial and domestic use, and the Aerofoil fan for general ventilation are described in three recent publications issued by Woods of Colchester, Ltd.

*

Periodical reviews of the work of the Simon Engineering Group will appear from time to time in special numbers of *The Simon Magazine*, the first of which, contributed by Anthony Simon, appears in the January, 1948, issue of the magazine.

*

A variable resistor whose resistance can be smoothly and continuously adjusted over a wide range of values, the Morganite carbon pile consists of a stack of carbon plates or discs assembled so that the contact pressure between them can be varied. Brief descriptions of its applications are contained in a pamphlet issued by the Morgan Crucible Co., Ltd.

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Descriptions of plant for use in food factories, jam factories, milk processing, dairies, and fruit juice processing factories are contained in a fully illustrated booklet issued by The A.P.V. Co., Ltd.

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## Mineral Supplementation

Of especial interest to makers of baby, infant, and invalid foods, the use of Calfos × 389 Powder can be extended far wider in the manufacturing field. It is a white powder, and contains all the mineral constituents of bone.

There is general agreement on the need for calcium supplementation, particularly during pregnancy, lactation, and early childhood. × 389 consists of 82 per cent. calcium and phosphorus, naturally balanced at 2·2:1, ensuring maximum assimilation, retention and deposition in the human body. Trace elements such as magnesium and silica are also present.

The material is easily mixed with a wide range of other ingredients and has been approved by the Ministry of Food. Abundant supplies are available of both 100 and 200 mesh powders and compared with current prices of calcium salts the price of £80 per ton is economical.

## OBITER DICTA

● Cleanliness and clean food is one of the rights of man, the sixth freedom — freedom from dirt.—*Dr. Alec Lerner.*

● Through a scarcity of eels, lengths of rubber piping were used to imitate jellied eels at a dinner of Brighton anglers.—*Reynolds.*

● One might say that never has so little meat been bought for so many people with so much money.—*Mr. Spence, M.P., during debate on Argentine Agreement.*

● I think some of the meat must come from animals which gave themselves up for slaughter.—*Mr. Dyson, addressing the Huddersfield Association.*

● If Cambridge win the boat race on March 27 they will make at least one cow contented.—*John Bouverie, writing in the "News Chronicle."*

● No one is surprised because film stars, bankers, industrialists and so on are rich, but everyone seems to think all well-to-do farmers are gangsters.—*French farmer.*

● French coffee doesn't look like coffee; it doesn't smell like coffee; it isn't coffee. English coffee looks like coffee, smells like coffee, is coffee—but it doesn't taste like coffee.—*Modern Paris saying.*

● Mr. Strachey wants to go down to fame as "*Bwana Njugu*," which means "Lord Groundnut." I fear he will go down to fame as "*Bwana Hapana Viazi*," which means "Lord No Potatoes." — *Mr. Walter Fletcher, M.P.*

● Can people eat horse meat and have a clear conscience? I would sooner starve to death than break faith with this intelligent and noble animal.—*Correspondent to "News of the World."*

● Will Dr. Summerskill arrange, if she can, for the next exports of sugar to include the Minister of Food, so that he can stay abroad for ever?—*Sir Waldron Smithers, M.P.*

● I'm sorry but I hate the guts of men who can sit warm and comfortable in their farmhouses while some workers live in pig-like conditions. I'm sorry but I hate the guts of boys who argue about more money for farming when what farming wants in order to save itself is more efficiency. — *Mr. Claud Morris.*

# News from Overseas

### Perennial Wheat Prospects

Perennial wheat, the dream of wheat growers throughout the world, may be a reality within twenty years, according to scientists of the University of Saskatchewan, who say that they have had some success in experiments started in 1938, interrupted during the war and resumed in 1945. Similar experiments were known to have started in Russia in 1928, but nothing is known of their progress.

Professor L. H. Shebeski, who is in charge of the Saskatchewan experiments, says that plenty of time and a fair amount of luck are involved in crossing thousands of wheat and grass plants to obtain a bread wheat which will come up every spring without seeding.

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### Australian Agar Agar Production

Prior to 1940 no knowledge of the technique required in the extraction of agar agar from seaweed was available in Australia, and after two years' intensive research Napier Lincoln Pty., Ltd., of Sydney, under the direction and active co-operation of the branch of the Council for Scientific and Industrial Research at Sydney,' governed by Dr. H. Thompson and Mr. J. Ferguson Wood, the scientist in charge of research into agar agar, were able to commence the production of a high-grade product from seaweeds available in Australian waters.

The process and technique evolved have proved so successful that the company has expanded its plant and machinery to such an extent that the output is now sufficient to satisfy demands made on the company by Australian users, and if the ready supply of the weed remains as at present, agar agar will be available for export in quantity.

The weed, *Gracilaria confervoides*, grows naturally and prolifically along the Australian coastline, and in view of the high prices paid for the dried weed, compared with the ease of gathering and drying, it is hoped that its collection will eventually become a large and prosperous industry.

### Progress in South Africa

Founded in Pretoria in 1928 by Mr. Albert Joffin, with a capital of £98, the Alfin Chemical Corporation of Johannesburg, formerly known as Jey's Products, now manufactures a wide range of products. The first lines to be manufactured were inks of all descriptions followed by household ammonia and packed oils. Towards the end of 1929 perfumery, cosmetics, cordials, fruit squashes, and flavouring essences were added to the range of the firm's products, followed two years later by the manufacture of boot, floor, furniture, and car polishes. Following the opening of a branch factory in Johannesburg in 1933, the whole factory was transferred to Johannesburg a year later, and in 1935 premises were acquired in Troyeville, Johannesburg, where the existing factory stands today.

The expansion of the business and the necessity of complying with certain control regulations made it necessary to form different companies for the different range of lines. At the same time the name Jey's Products was changed to Alfin Chemical Corporation and two associate companies were formed known as Delecta Products (Pty), Ltd., and Abner Chemicals (Pty), Ltd.

Plans are in hand to start the manufacture of pickles, sauces, mayonnaise, vegetable fat, tomato juice, custard, and jelly powder.

The squashes are prepared from South African fresh fruit processed in the factory under the most modern hygienic conditions and reinforced with flavours manufactured on the premises.

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### Shrimp Processing Afloat

A new quick-freeze factory ship, the *Arcturus*, has been equipped for processing shrimps and other fish and will operate in the Gulf of Mexico. The aft section of the deck-house has been fitted with wooden tables where the catch is prepared for freezing. This preparation entails deheading the shrimps or filleting the fish. The deck boxes are equipped with refrigerated coils which maintain the contents at a temperature of about 34° F. After the deheading operation, 5 lb. cartons of shrimps are placed either directly in the quick-freeze room or in the anteroom. The evaporator in the quick-freeze room maintains a temperature of −20° F. and is capable of freezing 1,500 lb. shrimps in five hours or less.

The final step in the processing operation is the packing of the cartons into larger containers which are placed in the completely insulated cargo hold, and stored at a temperature ranging from zero to 10° F.

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### Separation of Gummed Labels

A new product, supplied under the trade name "Quik," used for separating gummed papers which have become stuck together is being manufactured in America. The action is quick on application and leaves the original gummed coating unharmed.

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### Automatic Rice Mill

A compact "unit" rice mill with a capacity of 650 lb. to 750 lb. clean white rice per hour, entirely automatic in operation, has been designed by a U.S. engineering firm. The machine takes the rice through a hopper, moves it through the cleaning, shelling, etc., and finally grades it into head, broken, and brewers' rice.

### Ivory Macaroni

After eighteen years of experimenting, Dr. Luigi Borasio of Italy has succeeded in extracting from rice a type of flour that can be used in the manufacture of macaroni. Called ivory macaroni, the new product uses as much as 60 per cent. of rice in its manufacture. From the point of view of cooking, flavour, aroma, and elasticity, it is not inferior to the usual type and its nutritive value is almost identical, for it contains a slightly greater percentage of carbohydrates and is slightly inferior in protein content.

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### Polish Food Industry, 1947

The Polish State-owned food industry has considerably increased its output in 1947, compared with the previous year. Production in the main branches of the industry was as follows:

The confectionery industries concentrated mostly on output of sweets and macaroni, in which the target for the year was exceeded. With regard to chocolate, entirely dependent on imported raw materials, the target was not reached.

In the yeast industry all efforts were directed to the output of pressed yeast, in which the target was exceeded by 18 per cent. Production has increased by 20 per cent. compared with 1946.

The target set for the edible oil industry was not reached, as imports at the beginning of the year were delayed because of the freezing up of Polish ports. Nevertheless, production was nearly 47 per cent. higher than in 1946.

The coffee substitutes and chicory industry increased its output by 10 per cent. compared with 1946.

In view of the poor harvest of feedingstuffs and grains in 1947, some potatoes earmarked for the manufacture of by-products had to be turned over to the consumers' market.

In 1948 the greatest investments will be made in the edible oil industry, where machinery and apparatus for the production of margarine will be purchased. A margarine factory has been built at Gdansk, another will be erected in Warsaw, and consumption is expected to rise to at least one kilogramme of margarine per head of the population per year.

# News from the Ministries

### Resignations and Appointments

Mr. Maurice Hutton, C.M.G., is resigning his post as head of the British Food Mission in the United States with effect from June 30. He will be succeeded by Mr. G. R. Oake.

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Mr. R. N. Cannon has been appointed to the Panel of Advisers to the Director of Bakeries, Ministry of Food, in place of Mr. Stanley Brookes who has resigned on account of ill health. The Panel now consists of Mr. R. N. Cannon, Mr. J. N. Frears, Mr. W. S. Goodfellow, Mr. Victor Joseph, Mr. H. Marriott, and Mr. G. H. Mason.

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### Auxiliary Electrical Generating Plant

Although staggering of hours ended on March 29, it is still necessary to give all possible relief to the electricity grid, according to the Ministry of Fuel and Power.

Industrial and other undertakings which have been using auxiliary power installations to take part of their load during peak hours are therefore asked not to put them out of action for overhaul, unless absolutely necessary, until the danger of a cold spell in May is past.

Although it was made a condition when some of this plant was supplied that it was to be kept in continuous use, it has been agreed that this condition will not be enforced from the end of April to the beginning of October.

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### Price of Molasses

Owing to the increased cost of molasses purchased from abroad, the selling price for all purposes other than cattle feed was increased as from April 1, 1948, to cover the current average cost of supplies.

This will involve an increase in the production costs of industrial alcohol and solvents derived therefrom but not necessarily an increase in the selling price of all such solvents having regard to alternative methods of production.

### Export of Fish

An Open General Licence has been granted by the Board of Trade (in consultation with the Ministry of Food) authorising the unlimited export from the United Kingdom to any destination of all kinds of fish (other than canned fish) from April 1 to September 30, 1948. As a consequence, individual licences to export these goods between the above-mentioned dates will not be required.

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### Dried Kitchen Waste

Under the Kitchen Waste (Maximum Prices) (No. 4) Order, 1948, which became effective on March 18, 1948, the Kitchen Waste Orders, 1942 and 1943, will cease to apply to dried kitchen waste, viz.: kitchen waste which contains not more than 15 per cent. of moisture and is in millable condition.

As from March 18 the Ministry of Food will issue licences under the Feeding Stuffs (Regulation of Manufacture) Order, 1947, to manufacturers of dried kitchen waste.

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### Palestine and Import Licences

The Palestine authorities have issued new instructions about import licences for goods entering that country.

As a result of the removal of Palestine from the sterling area import licences issued before February 22, 1948, are declared invalid except for that portion of the licence for which confirmed credit has been opened. Goods arriving in Palestine against import licences thus invalidated will only be released from Customs on production of documents showing that shipment was made before March 15, 1948.

New applications for licences for goods shipped after this date will be considered only if terms of payment are against letters of credit. It is emphasised that new applications for licences will not be considered where the terms of payment are

1. Cash against documents.
2. Cash on delivery.
3. On current account.

# Token Imports During 1948

## NEW ARRANGEMENTS ANNOUNCED

It was recently announced in Parliament that arrangements have been made for the Token Imports Scheme to apply to the following countries during 1948: Australia, Canada, France, Holland, India, Italy, Pakistan, Sweden, Switzerland, U.S.A., and Denmark.

The annual quota will continue to be 20 per cent. of the value of each individual manufacturer's average 1936-1938 trade with the United Kingdom in the commodity in question.

The Token Imports Scheme can now only be applied to countries which offer the United Kingdom an adequate return within our general trade arrangements with them. The extension of the scheme to other countries will therefore be a matter for discussion with them.

The administrative arrangements with Canada, France, Holland, Italy, Sweden, Switzerland, U.S.A., and Denmark for the issue of Token Import quota certificates and shipment vouchers remain as previously announced. In Australia the issue of the necessary certificates and vouchers will be done by the Department of Commerce and Agriculture, and in India by the Ministry of Commerce, New Delhi. The administrative arrangements for Token Imports from Pakistan will be announced later.

The arrangements outlined above do not in any way affect import licences issued against 1947 Token Import quotas.

The list of Token Import commodities has been revised and consolidated, and so far as food and drink are concerned, is as follows:

Rolled or flaked oats.
Cheese rennet.
Vegetable butter colouring.
Whisky.
*Glacé* cherries.
Bottled fruits, processed for serving with ice cream.
Canned lobster.
Pickles.
Mustard.
Olives preserved in salt or brine.
Canned vegetables (other than tomatoes and tomato *purée*).
Quick frozen peas.
Canned soups.
Canned macaroni and spaghetti.
Canned pork and beans.
Jelly powder.
Sugar confectionery of all kinds, not including cocoa preparations.
Marshmallow (cooking ingredient).
Quick frozen fruits.
Onion and garlic salt.
Pectin (domestic pack).

### Trade Agreements with Iceland

A British delegation, representing the Ministry of Food and the Board of Trade, has returned from a visit to Iceland. As a result agreements have been concluded covering the supply by the Icelanders to the United Kingdom of, among other items, herring oil, herring meal, and frozen fish during 1948. In return the Icelanders have received assurances about supplies of coal, steel, sisal, and cement.

The Icelandic authorities will issue import licences within the limits of their sterling earnings. They have also agreed to issue import licences for a substantial part of British exports held by them in Customs. Exporters, before shipping goods to Iceland, should make certain that an Icelandic import licence has been received, as otherwise the goods may be refused entry.

### Queensland British Food Corporation

The Overseas Food Corporation and the Queensland Government have now agreed to a scheme for the cultivation of coarse grains and later, probably, sunflowers, on some 300,000 acres of grassland in Queensland. The coarse grains will be used for animal feedingstuffs, and in particular pig feed, partly in this country and partly in Australia. In the first year of the scheme in particular the larger part of the crop will be shipped to this country, but the use of the crop will be decided in the light of commercial and other considerations from year to year. The sunflower seed will be used to produce edible oils for the manufacture of margarine, etc.

The Queensland Government has introduced a Bill giving legal powers for the establishment of the Queensland British Food Corporation, a statutory company, into the Queensland Parliament. On the passage of this Bill by the Queensland legislature the "Queensland British Food Corporation" will be set up as a subsidiary of the Overseas Food Corporation to conduct the scheme. The Queensland British Food Corporation will have a capital of £A2,500,000, of which £A2,000,000 will be provided by the Overseas Food Corporation and £A500,000 by the Queensland Government. Much of the agricultural machinery and other capital resources needed for the scheme will be produced in Australia.

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### Import of New Carrots

The import of new carrots (with foliage attached) will be permitted during the period ending June 7, 1948, by the granting of specific licences to importers of fresh fruit and vegetables and to carrot merchants.

The following conditions will apply:

(*a*) supplies may be imported from Denmark, France, Holland, Italy, and French North Africa under individual licences; and

(*b*) imports must comply with the regulations of the Importation of Plants Order issued by the Ministry of Agriculture and Fisheries.

Applications for import licences from importers of fresh fruit and vegetables and carrot merchants should, in the first instance, be submitted to the Ministry of Food, Potato and Carrot Division, Import Section, Carlton Hotel, Pall Mall, London, S.W.1. Copies of the appropriate forms of application (form ILD/A) may be obtained from the Board of Trade, Import Licensing Department, 189, Regent Street, London, W.1, from the usual Customs Offices or from the Ministry of Food at the address given above.

Supplies of new carrots (with foliage attached) imported on or before June 7, 1948, under the above conditions will be free from price control.

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### Liquorice Juice

Individual licences are now required for the import of liquorice juice from any country. Import had hitherto been unrestricted.

# Information and Advice

## Precipitation of Pectin

B.2307. *Can you supply information on the practical aspects of plant and processes for the precipitation of pectin by ethyl alcohol?* (London.)

Eighty pounds of dried apple pomace are placed in a 200 gallon stainless steel tank provided with steam coil and a propeller-type agitator. Hot tap water is added to give a total volume of 150 gallons; the mixture is heated to 80° C. One pound of sodium hexametaphosphate and as much dilute (1 : 5) sulphuric acid is added to obtain a final *p*H between 3 and 4.

The mixture is then boiled for twenty minutes and cooled to 60° C. by circulation of cold water through the steam coil in the extraction tank. The pectin extract is pressed from the pomace by means of an hydraulic press and then filtered through a plate-and-frame filter press, using a medium grade of diatomaceous filter aid.

The filtered extract is concentrated to 39 gallons in a forced circulation vacuum evaporator.

The pectin concentrate is adjusted to *p*H 6·50 with NaOH 2N, and brought to a temperature of 40° C. Then 10 grams of diastase (the clarase is the best) is added. The mixture is stirred and the diastase reaction is continued until the starch iodine test is negative.

The mixture is *immediately* acidified to *p*H 4·0 by adding 1 : 5 sulphuric acid and heated to 80° C. during five minutes.

When the mixture is cold the pectin is precipitated by the addition of 1 volume of 95 per cent. alcohol and pressed in an hydraulic press. The pressed precipitate is disintegrated and covered with 10 gallons of 95 per cent. alcohol and left to stand for two hours. The alcohol is removed by pressing.

The residue is dried under vacuum at 60° C. to 70° C. and then ground to 60 mesh in a hammer-mill.

## Desiccated Coconut

B.2387. *Please supply details of processing raw coconuts for the manufacture of the desiccated product.* (London.)

Nuts to be used for making desiccated coconut should not be husked until a few days before they are wanted in the factory; they ripen in the husk, and if removed are liable to crack. When ripe, the nuts are picked over by skilled sorters, and only ripe, unblemished nuts delivered into the factory, where the shells are removed. During this process some unsound nuts are certain to be found in spite of the initial sorting, and it is essential that these be rejected. The kernel is decorticated by means of spokeshaves, the parings being removed to a separate drier and eventually converted into coconut oil and cake.

The pared nuts are at once placed in long concrete tanks lined with white tiles and supplied with constantly running water. This must be done quickly in order to avoid oxidation. It is of the utmost importance that there should be available plenty of pure water. Blemishes, dirt marks, small pieces of parings, etc., are removed at this stage, and the nuts are cut to the correct size and shape for the slicer machine, to which they are taken in wicker baskets, from which the water is able to run quickly. It is very important that the cutting knives should be as sharp as possible in order to tear apart the minimum number of oil cells, otherwise bruising and bad colour of product will result. The sliced nut falls into wooden or iron boxes made so that water can run away at the bottom; as soon as these are full they are taken to hot-air driers.

Trays about 3 ft. 6 in. square by about 2½ in. deep, having galvanised wire mesh bottoms, are used for the drying; they hold about 20 lb. to 25 lb. of material, which enters the desiccators heated to 180° F. to 200° F. The critical temperature for certain enzymes is considered to be 180° F. Drying goes on for forty-five minutes, and then the dried material is spread out on wooden tables for cooking and inspection before being sifted and packed. Moisture content is generally reduced to 2 per cent. to keep down discoloration and rancidity during transit to market. The hygrometric state of the atmosphere must be determined at intervals, and the time and temperature in the desiccators related to this. A point which is often overlooked is that the moisture content of the goods will vary with the size, the finer cuts containing less moisture.

Temperature and hygroscopicity of the atmosphere must be watched during packing, as the material must not be allowed to absorb moisture during this operation. The goods should be handled as little as possible, and the packing evenly done to avoid lumpiness; a press is frequently employed, whereby a high density of product in the case is obtained. Seamless plywood boxes are very suitable, and paper, aluminium, or lead linings are employed according to the market to which the goods are to be sent.

The most important points to observe, and these are frequently overlooked, are:

(1) Care in the original selection of the nuts; (2) prompt immersion of the pared nuts in clean water, which should be abundant; (3) minimum of delay between removing the nuts from the tank and introduction into the drier; (4) temperature in the drier not less than 180° F.; (5) cooling to the correct temperature before packing; (6) speedy and efficient packing, with the exclusion of light, gases, and moisture.

## Information Supplied

B.2382. *Literature dealing with the manufacture of breakfast cereals.* (London.)

B.2385. *Names and addresses of suppliers of milk cartons.* (Scotland.)

B.2387. *Manufacturers of machinery suitable for desiccation of coconuts.* (London.)

B.2388. *Firms supplying propylene glycol.* (Leicester.)

B.2390. *Details of literature dealing with mayonnaise, sauces, etc.* (Eire.)

B.2392. *Suppliers of cubing machinery.* (Lincoln.)

## Information Required

B.2442. *Suppliers of locust bean syrup.* (Sunderland.)

# Recent Patents

*These particulars of new patents of interest to readers have been selected from the "Official Journal of Patents," and are published by permission of the Controller of H.M. Stationery Office. The journal can be obtained from the Patent Office, 25, Southampton Buildings, London, W.C. 2, price 1s. weekly (annual subscription £2 10s.).*

## Specifications Published

*Printed copies of the full Published Specifications may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C. 2, at the uniform price of 1s. each.*

590,809. NATIONAL OIL PRODUCTS Co.: Vitamin compositions and the manufacture thereof.

590,827. BAKER PERKINS, LTD., and BOWKER, H. W.: Control of the conveyors of bread provers.

590,949. BOSANQUET, N.: Process for the production of treacle from beet molasses.

592,823. CLEVELAND, F. J. (Union Starch and Refining Co.): Process of hydrolysis of starch.

592,829. HARGREAVES (METALS), LTD., and HARGREAVES, A.: Air cooling apparatus for cooling bottles and other like containers in bottle-washing machines of the tunnel type.

592,831. WESTERN ELECTRIC CO., INC.: Metal to glass seals and methods of making them.

592,898. EVERSHED AND VIGNOLES, LTD., and MARCHMENT, W. T.: Devices for regulating or controlling the level of liquid or other flowing material.

592,955. AKTIEBOLAGET ELEKTROLUX: Absorption refrigerating apparatus.

593,053. SILBERMAN, F.: Boxes and like containers.

## Abstract of a Recent Specification

### The Extraction of Oil from Liver

This invention relates to the extraction of oil from liver by means of a solvent.

It has been proposed to prepare a fish liver oil by steaming fish livers at a temperature below 100° C., *e.g.* 70° to 80° C., discarding the aqueous liquid thus produced immediately and rapidly cooling the residue to a temperature below the boiling point of the solvent to be used and preferably to approximately freezing temperature, then extracting the oil from the cooled residue by means of the solvent, and subsequently removing the solvent from the oil thus extracted.

It has also been proposed to extract oil from fish liver by mixing with the comminuted liver an oil absorbent vegetable meal, digesting the mixture at a temperature below 100° C., *e.g.* at about 70° C., preferably with the addition of an alkali, and finally cooling the mixture and extracting the oil from it, *e.g.* by means of a solvent.

In certain other processes for the extraction of oil from liver, primarily mammalian liver, by means of a solvent a preliminary step is the drying of the liver. The drying may be carried out in continuous or batch driers which consist of a cylindrical vessel or vessels provided with agitating mechanism for keeping the liver (which is usually minced beforehand) in motion during drying and with steam jackets to provide heating. The drying is often carried out under vacuum.

By heating the minced liver to a temperature sufficient to cause coagulation of the albuminoid matter in the liver, the formation of large lumps is avoided. In carrying out the heating process, it is preferred to stir the material while being heated, and sufficient water may be added to give a mixture which can be readily stirred.

The temperature required to produce coagulation is readily determined from the change in colour and character of the liver when coagulation takes place. A temperature of about 65° to 80° C. usually appears to be necessary with whale liver. The optimum temperature may vary with the type of liver being treated; for example, the range 65° to 75° C. is suitable for blue whale liver. When the coagulation has been effected, any surplus water can be drained off before the liver is fed to the drier.

The coagulated or "parcooked" liver, when subjected to the drying process, does not show the marked tendency to form lumps which is exhibited by raw liver.

In addition, if the parcooked liver is fed to the drier in a hot condition direct from the parcooking process less heat is required to be supplied in the drier.

The object of operating the drier under vacuum is to keep the temperature of the material low during drying, and two purposes are served, viz. prevention of damage to the material by overheating and an increase of the rate of heat transmission through the heating surface.

When the object of the extraction process is to produce a liver oil with a high vitamin content, exposure to oxidation should be reduced to a minimum and the presence of metals which catalyse the oxidation should be avoided. It may be desirable to add to the raw liver a small amount of anti-oxidant to protect the vitamin against oxidation during the process.

585,304. *United Whalers, Ltd., and Arthur Joseph Victor Underwood.*

## Trade Marks

*The list of trade marks of interest to readers has been selected from the "Official Trade Marks Journal" and is published by permission of the Controller of H.M. Stationery Office. The journal can be obtained from the Patent Office, 25, Southampton Buildings, London, W.C. 2, price 1s. weekly (annual subscription £2 10s.).*

**ARPRA.**—647,744. Chemical products used in industry, substances for preserving foodstuffs, and adhesives used in industry. **Allan Rycroft Parkinson,** 158, City Road, London, E.C.1; Merchants.

**SPRY.**—648,908. Edible oils and edible fats, all for export. **Van Den Berghs (Export), Ltd.,** Unilever House, Blackfriars, London, E.C.4; Merchants.

**TASKET.**—649,187. Confectionery (not medicated). **Mars Confections, Ltd.,** Broad Street House, Old Broad Street, London, E.C.2; Manufacturers and Merchants.

**JOAN OF ARC.**—649,466. Preserved, dried, canned, and cooked fruits and vegetables; soups, and canned pork and beans. **Schuckl and Co., Inc.** (a Corporation organised under the laws of the State of California, U.S.A.), Sunnyvale, California, U.S.A.; Canners and Exporters.

## New Companies

**Cotton Refrigeration, Limited.** (439717.) 54, Pool Street, Caernarvon. To carry on bus. of manufacturers and suppliers of refrigeration equipment carried on at Caernarvon by F. L. Cotton. Nom. cap.: £15,000 in £1 shares (3,000 cum. pref.). Dirs.: F. L. Cotton (man. dir.) and H. Cotton, 54, Pool Street, Caernarvon.

**E. J. Kelsall, Limited.** (439721.) 692, Alum Rock Road, Saltley, Birmingham. To carry on bus. of dealers in flour and sugar confectionery, etc. Nom. cap.: £4,000 in £1 shares. Dirs.: E. J. Kelsall and Mrs. L. A. Kelsall, 692, Alum Rock Road, Saltley, Birmingham.

**Munday (Walthamstow), Limited.** (439871.) Station Chambers, opp. Hoe Street Station, Walthamstow, E.17. To carry on bus. of refrigeration engineers, etc. Nom. cap.: £1,000 in £1 shares. Dirs.: F. G. Munday and Mrs. D. E. Munday, 112, High Road, Buckhurst Hill, Essex.

**Manna Food Products, Limited.** (439947.) 21/4, East Row, Kensal Road, W.10. Nom. cap.: £15,000 in 10,000 cum. pref. shares of £1 and 100,000 ord. of 1s. Dirs.: A. G. H. Eddy and May H. J. Eddy, Grove Ash, Grove Road, Beaconsfield.

*Taken from the Daily Register, compiled by Jordan and Sons, Limited, Company Registration Agents, 116, Chancery Lane, London, W.C. 2.*

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